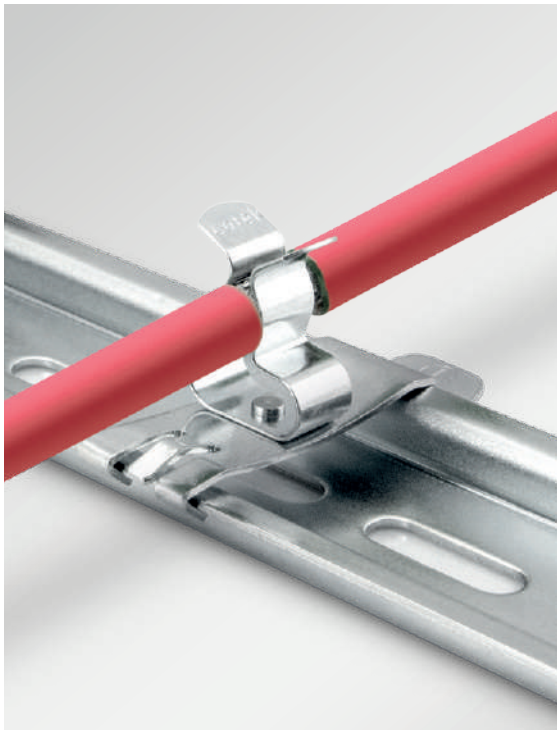
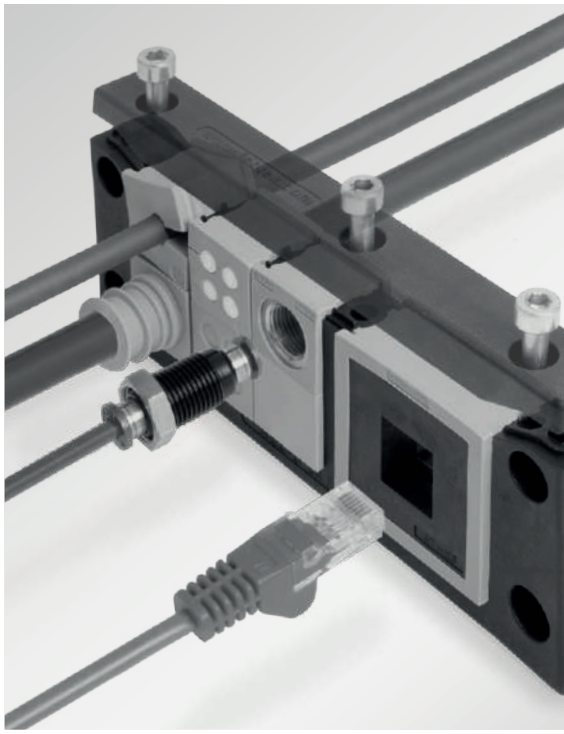
Technology Partner
A ROCKWELL AUTOMATION PARTNER

icotek®
smart cable management

Product Catalog 38

Cable Management Systems





North America

A company of the icotek group

smart cable management

Ideas move the world – under this motto we have been developing innovative cable management systems since 1995. From our headquarters in Eschach, Germany, we produce our smart cable management solutions and distribute them in more than 60 countries. We are a strong and reliable partner for the industry together with our subsidiaries in Europe, Asia and North America as well as our global representatives. Globally leading companies from various sectors rely on our know-how and our innovative strength. Numerous patents and certifications are both an incentive and aspiration for us.

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icotek can develop a solution for
your individual needs.
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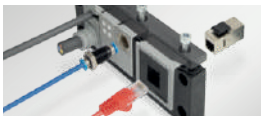

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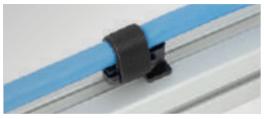

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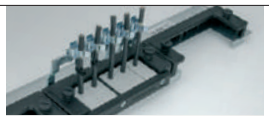

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8 **icotek TOOLS**
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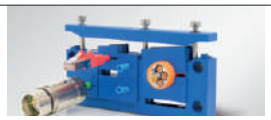

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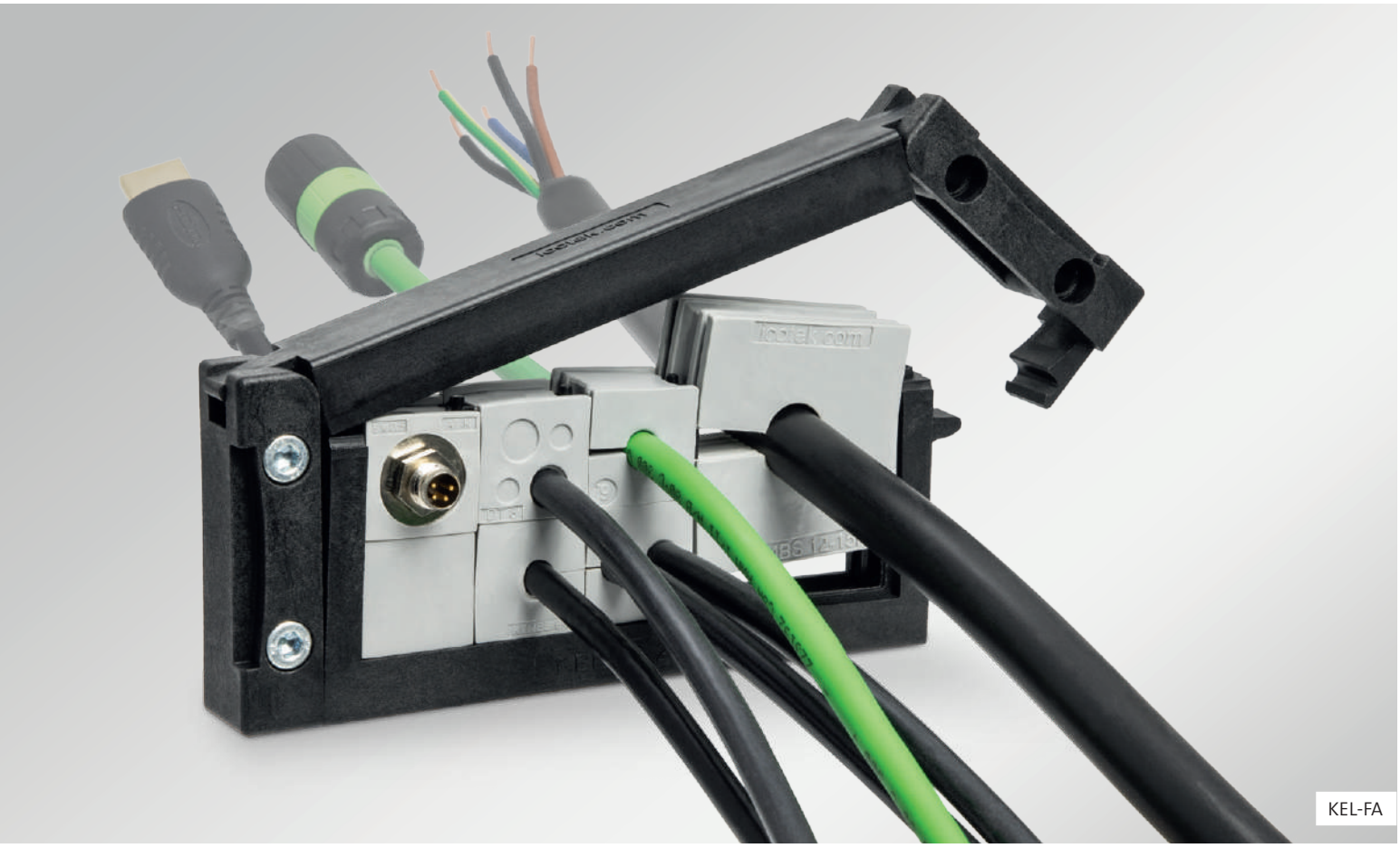


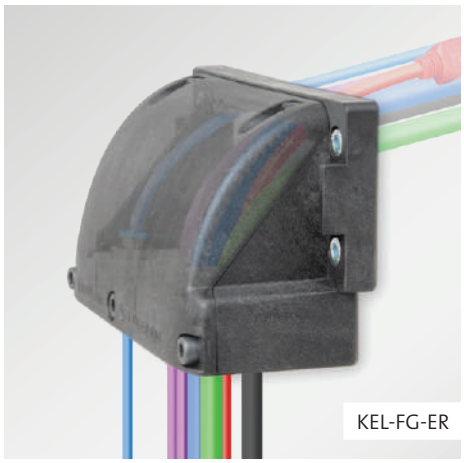
KEL-FA

c UL us · IP68 · UL TYPE 4X (UL 508) · RINA · DNV (TYPE APPROVED PRODUCTS, DNV.COM/AF) · HL3 EN 45545-2 · E45 EI30 EN 45545-3 · EN 61373 · JAPAN RAILWAY TESTED FLAME RETARDANT

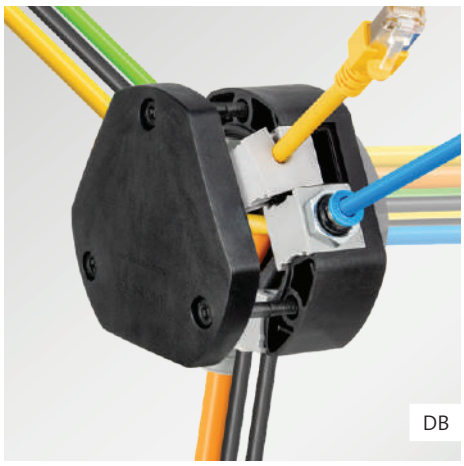
UV ISO 4892-2A · EN ISO 14644 · PNEUMATICS · ECOLAB certified · RoHS compliant · Made in Germany · UL-94 V0 · +140°C -40°C · 1–75 mm

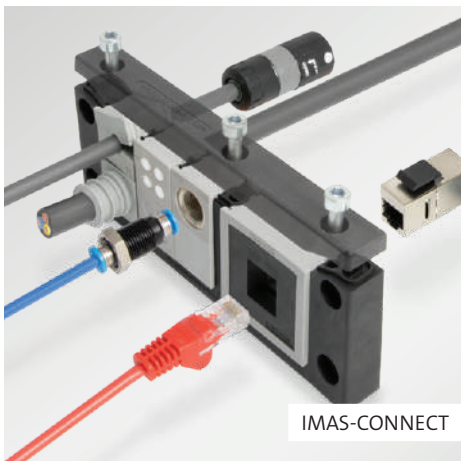
Cable Entry Systems
for Cables with Connectors

KEL-ER/KEL-U

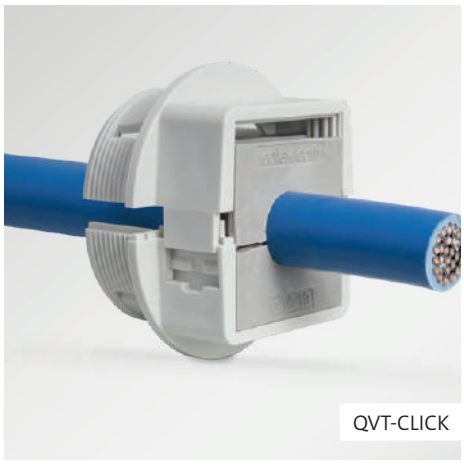

KEL-FG-ER

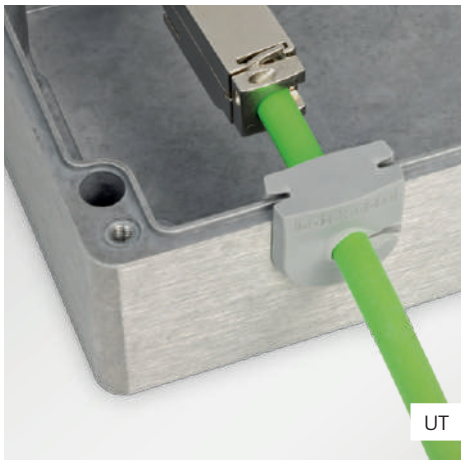
KVT-ER


DB


IMAS-CONNECT

KEL-QUICK


QVT-CLICK


UT

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1 Cable Entry Systems
for Cables with Connectors

Product group 1 includes all split cable entry systems in round and rectangular versions. Cables with and without preassembled connectors with a maximum diameter of 75 mm can thus be inserted.

The key features of the patented system are the split frame and split grommets which provide quick, convenient and cost effective routing of pre-terminated and multi-conductor cables, hoses and conduits. The split frame and split grommets alleviate the need to cut and re-wire pre-terminated cables. Therefore, cable warranties are unaffected.

By closing the upper and lower part of the frame a high contact pressure on the cable grommets and cables is achieved. In most cases, the cables are strain relieved according to EN 62444 and immediately sealed with IP54 to IP66/ IP68/UL type 4X (depending on type).

icotek also offers split and non-split brush plates for cable pass-through, based on rectangular and round standard cut-outs – a very cost-effective solution if sealing with IP54 ist not required. See product group 7.

All icotek products with a type rating have been tested and certified by UL according to UL 50E!
More information about UL Type Rating vs. NEMA Rating in the appendix on page 461.

Configure your custom frames and grommets conveniently online with our Product Configurator on www.icotek.com

ProductFinder

Product	IP54	IP65 IP66	IP67 IP68	UL TYPE 12	UL TYPE 4X*	Strain relief	IMAS-CONNECT™ compatible	Cable Ø mm min | max	Max. no. of cables	Page
KEL-ER	●	●		●	●	●	●	1 - 35 0.039 - 1.378 "	10	16 – 19
KEL-ER-E	●	●		●		●	●	1 - 16 0.039 - 0.63"	5	19
KEL-U	●			●		●	●	1 - 35 0.039 - 1.378 "	40	20 – 22
KEL-E	●			●		●	●	1 - 16 0.039 - 0.63 "	20	23
KEL-FA	●					●	●	1 - 35 0.039 - 1.378 "	40	24 – 27
KEL	●			●		●	●	1 - 35 0.039 - 1.378 "	40	28 – 31
KEL 16/24 Extensions	●					●	●	1 - 35 0.039 - 1.378 "	120	32 – 37
KEL-FG-ER	●	●				●	●	1 - 35 0.039 - 1.378 "	10	44 – 47
KEL-FG-A/B	●			●		●	●	1 -35 0.039 - 1.378 "	40	48 – 50
KEL-FG-E	●			●		●	●	1 - 16 0.039 - 0.63 "	20	51
KEL-FW	●	●				●	●	1 -35 0.039 - 1.378 "	16	52 – 53
KEL-FL	●					●	●	1 - 16 + flat cables	13	40 – 41
MIS	●	●		●		●	●	1 - 16 0.039 - 0.63 "	8	42 – 43
KEL 183	●			●		●	●	1 - 75 0.039 - 2.953 "	16	38 – 39
KEL-SNAP(-S)	●							–	–	54 – 57
KEL-JUMBO	●			●		●	●	1 - 65 0.039 - 2.56 "	2	58 – 59
KVT-ER	●	●	●	●	●	●	●	1 - 35 0.039 - 1.378 "	4	62 – 63
KVT	●			●		●	●	1 - 35 0.039 - 1.378 "	16	62 – 65
KVT-SNAP	●					●	●	1 - 35 0.039 - 1.378 "	16	67
KVT-W90	●					●	●	1 - 35 0.039 - 1.378 "	16	68
KVT 80	●			●		●	●	1 - 35 0.039 - 1.378 "	24	66
DB	●					●	●	1 - 15 0.039 - 0.591 "	48	70 – 73
KEL-QUICK	●			●			●	1 - 29 0.039 - 1.142 "	40	104 – 109
QVT	●						●	1 - 15 0.039 - 0.591 "	16	110
QVT-CLICK	●						●	1 - 29 0.039 - 1.142 "	16	113
KEL-QTA	●							1 - 15 0.039 - 0.591 "	26	114 – 117
KEL-QTE	●							1 - 15 0.039 - 0.591 "	2	114 – 117
UT/UT-DT	●							3.2 – 11	5	138 – 139
KEL-BES / KEL-BES-S								max. 33 1.299 "		366 – 367

*4X for indoor use only | Further details on certifications and technical specifications can be found on the product pages.

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1.11 Split Cable Entry Frames
for the KT Grommet System

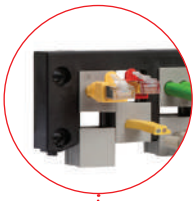
The patented cable entry system enables the user to route, seal and provide strain relief according to EN 62444 for pre-terminated cables and cables without connectors (up to 75 mm in diameter).

Electrical, pneumatic or hydraulic lines as well as corrugated conduits and hoses can be easily routed, sealed and strain relieved using split cable entry systems.

The patented system's key feature is its split frame and split grommets, which provide a quick, convenient, and cost-effective way to route pre-terminated and multi-conductor cables, hoses, and conduits. These features eliminate the need to cut and rewire pre-terminated cables. Therefore, cable warranties remain unaffected.

Cables, pipes and conduits with various diameters can be routed due to a large variety of split grommets. When assembled correctly, the split grommets are held tightly within the frame. Correctly sizing the grommet to the cable diameter ensures a high degree of protection (up to IP66/ UL type 4X) and provides strain relief.

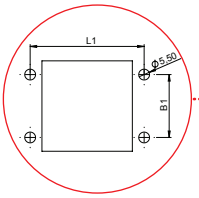
Split system



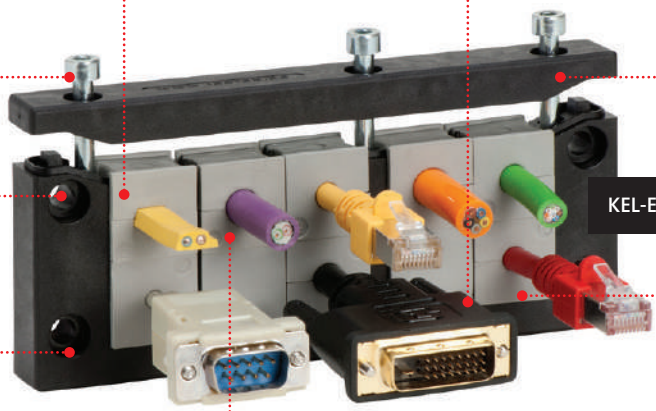
Secure and tight connection

Maintain warranty on pre-terminated cables

Fast and easy assembly



Most sizes are industrial standard cut-outs. No need for additional tooling.



KEL-ER

High cable density, wide variety in cable grommets and adapter grommets

Integrated strain relief according to EN 62444

Can be combined with IMAS-CONNECT adapter grommets

KEL-U/KEL: IP54 rated protection
KEL-ER: IP66 due to a high clamping pressure on the cover lid and injected sealing

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1.11 Split Cable Entry Frames
for the KT Grommet System

Split Cable Entry Frames | UL types 4X / 12
for Cable Diameters up to 35 mm

KEL-ER Series

16 – 19

Split Cable Entry Frames | UL type 12
for Cable Diameters up to 35 mm

KEL-U Series / KEL-E Series

20 – 23

Split Cable Entry Frames "Fast Assembly"
for a Fast Assembly without Tools
for Cable Diameters up to 35 mm

KEL-FA series

24 – 27

Centrally Split Cable Entry Frames | UL type 12
for Cable Diameters up to 35 mm

KEL Series

28 – 31

Extended Split Cable Entry Frames |UL type 12
for Cable Diameters up to 35 mm

KEL Series, Extended

32 – 37

Split Cable Entry Frames | UL type 12
for Cable Diameters up to 75 mm

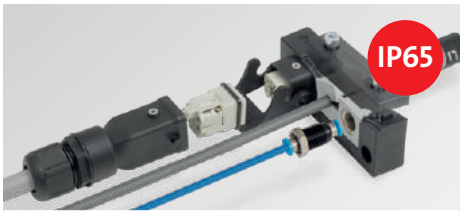
KEL 183 / KEL 183-E / KTMB 183

38 – 39

Split Cable Entry Frames for Flat Cables
& Round Cables up to 17 mm in Diameter

KEL-FL / FT

40 – 41



Split Cable Entry Frame
with Connection for 3A and 4A Connectors

MIS

42 – 43

Split Flange Enclosure for 90° Cable Transit
with integrated seal
for Cable Diameters up to 35 mm

KEL-FG-ER Series

44 – 47

Split Flange Enclosure for 90° Cable Transit
for Cable Diameters up to 35 mm

KEL-FG Series

48 – 51

Bulkhead for 90° Cable Transit
for Cable Diameters up to 35 mm

KEL-FW

52 – 53

Snap Mounting Frames | UL type 12
for Installation of KEL-U / KEL Frames

KEL-SNAP-S / KEL-SNAP

54 – 57

Split Cable Entry Frames | UL type 12
for Cable Diameters up to 65 mm

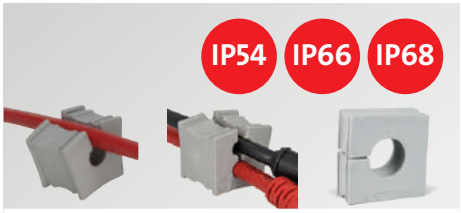
KEL-JUMBO / KTF

58 – 59

360° Cable Entry
for Cable Diameters up to 15 mm

DB

70 – 73



Cable Grommets
Split and not Split,
for Cables with/without Connectors,
for Cable Diameters 1 – 35 mm

74 – 90

IMAS-CONNECT™
Modular Adapter System for the KT System

Adapter Grommets / Accessories

92 – 103

Thread extension
for Cable Glands and Cable Entry Plates
M25, M32, M50, M63

TE-M

346 – 351

Split Brush Plate
for Cable Pass-Through
for Standard Cut-Outs

KEL-BES-S

367

Product configurator
www.icotek.com/en/config

69 367

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KEL-ER Series
Cable Entry Frames with IP66 Rating

Split cable entry system for routing and sealing cables with connectors, providing an IP66/UL Type 12/4X rating and strain relief for cable diameters from 1 to 17 mm (single-hole grommets KT1 to KTs17) and 16 to 35 mm (single-hole grommets KT16 to KT34).

The multi cable transit system is easy to install. Cable grommets are placed into compartments and are securely fixed to the frame during assembly.

The KEL-ER frames match exactly the cut-out dimensions for 10-, 16- and 24-pin standard industrial connectors. Either a cut-out of 36 mm or 46 mm in height can be chosen depending on the cables being routed. The KEL-ER-B frame matches the cut-out dimensions of 46 × 46 mm measuring instruments.

The single-row versions KEL-ER-E are particularly suited for flat connectors. The small frames are ideal for applications with limited space. A flat rubber gasket is included in the shipment.

The version with threaded bushings enables the cable entry frame to be screwed onto the housing from the inside out. This protects against vandalism and tampering with the housing from the outside.

Advantages & Benefits

- Maintain manufacturer's warranty on pre-terminated cables
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Strain relief according to EN 62444
- High stability, vibration resistant
- Can be combined with IMAS-CONNECT adapter grommets

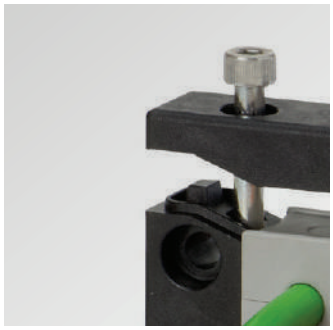
Specifications

Material	Polyamide (PA)
Flame class	UL94-V0, self-extinguishing
IP rating	IP66, with gasket and correct selection of single grommets (certified acc. to EN 60529)
UL type rating	UL type 4X (acc. to UL 50E)
Operating temperature	- 40°C to + 140°C (static) - 40°F to + 284°F (static)
Properties	Halogen-free, silicone-free
Frame depth	17 mm / 0.669"

Accessories

KT Cable grommets	74 - 89
AT Adapter grommets	92 - 103
KEL-EMC Grounding mounts	274 - 276
ST Plugs	87

The cable entry frames enable the integration of the new IMAS-CONNECT adapter grommets



Also available with stainless steel screws (V2A)

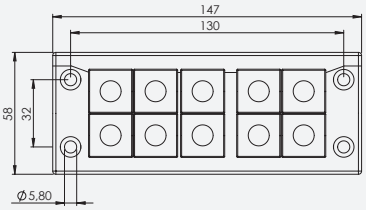
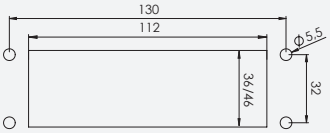
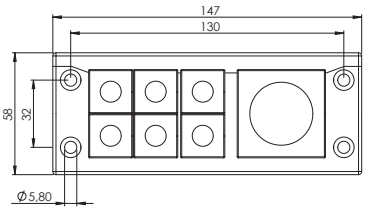
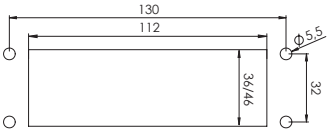
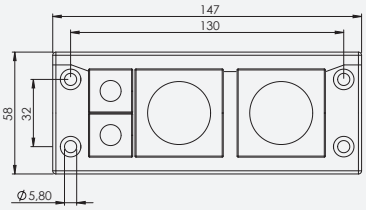
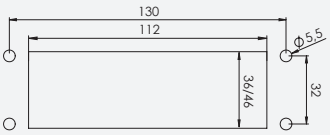
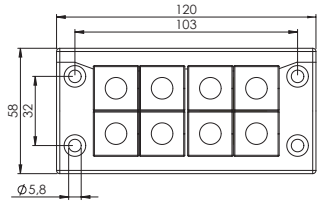
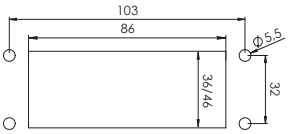
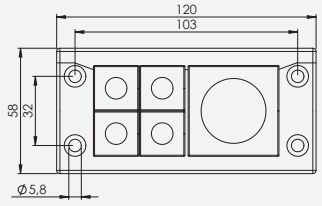
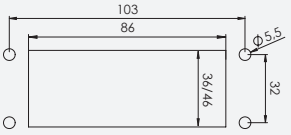
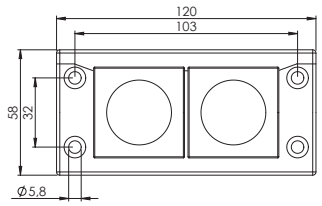
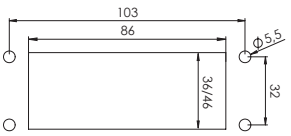
Also available with threaded bushings

Split KT grommets

The KEL-ER series is also available as a cleanroom version, see from page 412.

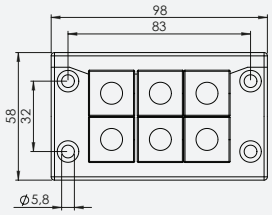
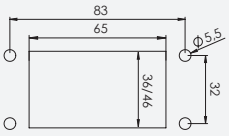
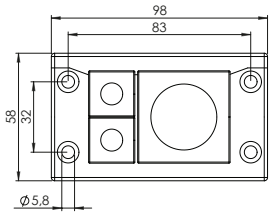
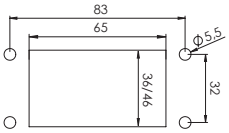
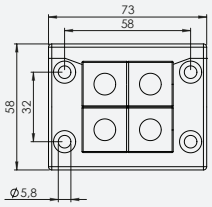
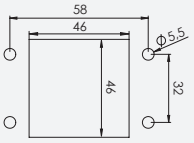
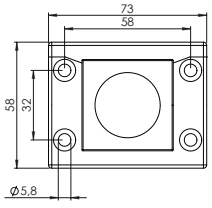
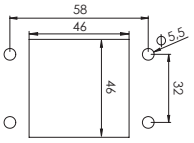
*4X for indoor use only

KEL-ER
Cable Entry Frames
KEL-ER 24, KEL-ER 16

Description	Cut-out | Drilling template	Type	Cut-out mm	Grommets small | large	Order No.	PU
		KEL-ER 24|10	36/46 × 112 1.417/1.811 x 4.409"	10 | –	48241	10
		KEL-ER 24|10 with V2A screws	36/46 × 112	10 | –	48241.200	10
		KEL-ER 24|10 with threaded bushings M4	36/46 × 112	10 | –	48241.400	10
		KEL-ER 24|7	36/46 × 112 1.417/1.811 x 4.409"	6 | 1	48247	10
		KEL-ER 24|7 with V2A screws	36/46 × 112	6 | 1	48247.200	10
		KEL-ER 24|7 with threaded bushings M4	36/46 × 112	6 | 1	48247.400	10
		KEL-ER 24|4	36/46 × 112 1.417/1.811 x 4.409"	2 | 2	48244	10
		KEL-ER 24|4 with V2A screws	36/46 × 112	2 | 2	48244.200	10
		KEL-ER 24|4 with threaded bushings M4	36/46 × 112	2 | 2	48244.400	10
		KEL-ER 16|8	36/46 × 86 1.417/1.811 x 3.386"	8 | –	48168	10
		KEL-ER 16|8 with V2A screws	36/46 × 86	8 | –	48168.200	10
		KEL-ER 16|8 with threaded bushings M4	36/46 × 86	8 | –	48168.400	10
		KEL-ER 16|5	36/46 × 86 1.417/1.811 x 3.386"	4 | 1	48165	10
		KEL-ER 16|5 with V2A screws	36/46 × 86	4 | 1	48165.200	10
		KEL-ER 16|5 with threaded bushings M4	36/46 × 86	4 | 1	48165.400	10
		KEL-ER 16|2	36/46 × 86 1.417/1.811 x 3.386"	– | 2	48162	10
		KEL-ER 16|2 with V2A screws	36/46 × 86	– | 2	48162.200	10
		KEL-ER 16|2 with threaded bushings M4	36/46 × 86	– | 2	48162.400	10

*4X for indoor use only

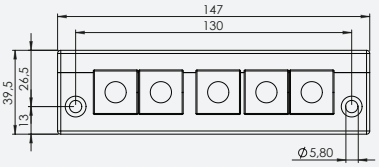
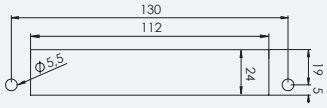
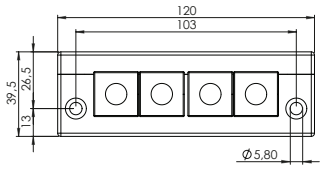
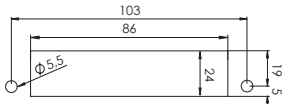
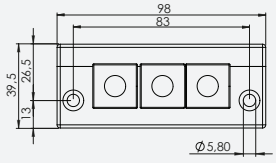
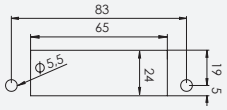
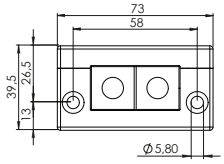
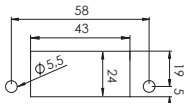
KEL-ER
Cable Entry Frames
KEL-ER 10, KEL-ER B

Description	Cut-out | Drilling template	Type	Cut-out mm	Grommets small | large	Order No.	PU
		KEL-ER 10|6	36/46 × 65 1.417/1.811 x 2.205"	6 | –	48216	10
		KEL-ER 10|6 with V2A screws	36/46 × 65	6 | –	48216.200	10
		KEL-ER 10|6 with threaded bushings M4	36/46 × 65	6 | –	48216.400	10
		KEL-ER 10|3	36/46 × 65 1.417/1.811 x 2.205"	2 | 1	48212	10
		KEL-ER 10|3 with V2A screws	36/46 × 65	2 | 1	48212.200	10
		KEL-ER 10|3 with threaded bushings M4	36/46 × 65	2 | 1	48212.400	10
		KEL-ER-B4	46 × 46 1.811 x 1.811"	4 | –	48204	10
		KEL-ER-B4 with V2A screws	46 × 46	4 | –	48204.200	10
		KEL-ER-B4 with threaded bushings M4	46 × 46	4 | –	48204.400	10
		KEL-ER-B1	46 × 46 1.811 x 1.811"	– | 1	48206	10
		KEL-ER-B1 with V2A screws	46 × 46	– | 1	48206.200	10
		KEL-ER-B1 with threaded bushings M4	46 × 46	– | 1	48206.400	10

The KEL-ER series is also available as a cleanroom version, see from page 412.

*4X for indoor use only

KEL-ER
Cable Entry Frames
KEL-ER-E

Description	Cut-out | Drilling template	Type	Cut-out mm	Grommets small | large	Order No.	PU
		KEL-ER-E5	112 × 24 4.409 x 0.945"	5 | –	48250	10
		KEL-ER-E5 with V2A screws	112 × 24	5 | –	48250.200	10
		KEL-ER-E5 with threaded bushings M4	112 × 24	5 | –	48250.400	10
		KEL-ER-E4	112 × 24 4.409 x 0.945"	4 | –	48259	10
		KEL-ER-E4 with V2A screws	112 × 24	4 | –	48259.200	10
		KEL-ER-E4 with threaded bushings M4	112 × 24	4 | –	48259.400	10
		KEL-ER-E3	65 × 24 2.205 x 0.945"	3 | –	48258	10
		KEL-ER-E3 with V2A screws	65 × 24	3 | –	48258.200	10
		KEL-ER-E3 with threaded bushings M4	65 × 24	3 | –	48258.400	10
		KEL-ER-E2	43 × 24 1.693 x 0.945"	2 | –	48249	10
		KEL-ER-E2 with V2A screws	43 × 24	2 | –	48249.200	10
		KEL-ER-E2 with threaded bushings M4	43 × 24	2 | –	48249.400	10

The KEL-ER series is also available as a cleanroom version, see from page 412.

*4X for indoor use only

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1.12
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KEL-U Series
Cable Entry Frames with IP54 Rating

Split cable entry system for routing cables with connectors providing an IP54/UL Type 12 rating. Routing, sealing and providing strain relief for cable diameters from 1 to 35 mm.

The cable entry system is easy to install. Cable grommets are placed into compartments and are securely fixed to the frame during assembly.

The KEL-U frames match exactly the cut-out dimensions for 10-, 16- and 24-pin standard industrial connectors. Either a cut-out of 36 mm or 46 mm in height can be chosen depending on the cables being routed. The KEL-U-B frame matches the cut-out dimensions of 46 × 46 mm measuring instruments. For tool-less assembly/disassembly of the cable entry frames the snap mounting frame KEL-SNAP can be used.

The single-row versions KEL-E are particularly suited for flat connectors. The small frames are ideal for applications with limited space. All frame systems come with a rubber gasket.

The version with threaded bushings enables the cable entry frame to be screwed onto the housing from the inside out. This protects against vandalism and tampering with the housing from the outside.

Advantages & Benefits

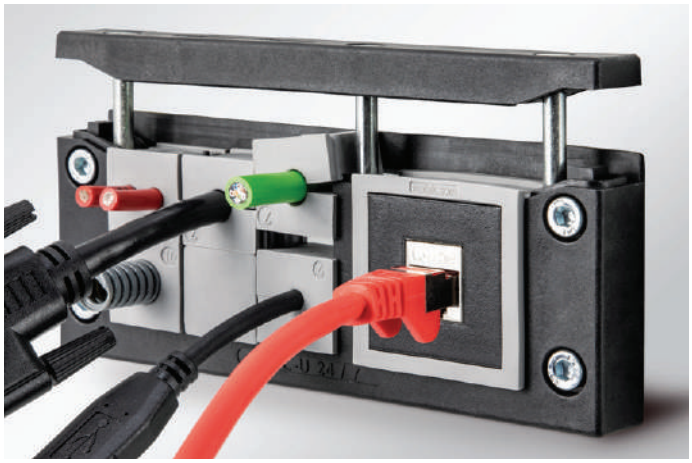
- Fast and easy assembly
- Maintain manufacturer's warranty on pre-terminated cables
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Strain relief according to EN 62444
- High stability, vibration resistant
- Can be combined with IMAS-CONNECT adapter grommets

Specifications

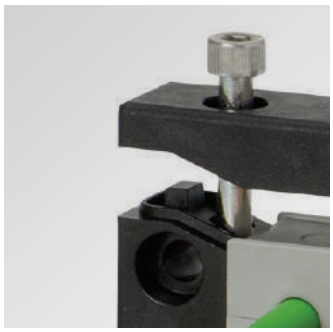
Material	Polyamide (PA)
Flame class	UL94-V0, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Operating temperature	- 40°C to + 140°C (static) - 40°F to + 284°F (static)
Properties	Halogen-free, silicone-free
Frame depth	17 mm

Accessories

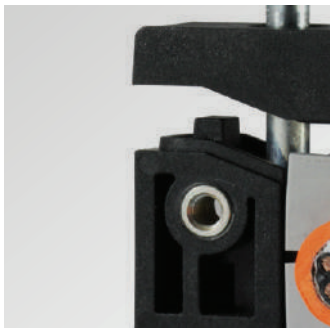
KT Cable grommets	74 - 89
AT Adapter grommets	92 - 103
KEL-SNAP Mounting frames	56 - 57
KEL-EMC Grounding mounts	274 - 276
KDR Base plates	310 - 331
FP Flange plates	332 - 341
ST Plugs	87



The cable entry frames enable the integration of the adapter grommets IMAS-CONNECT™



Also available with stainless steel screws (V2A)

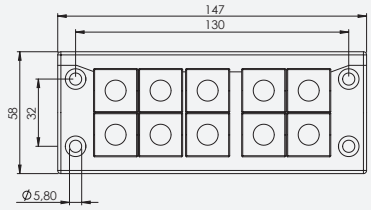
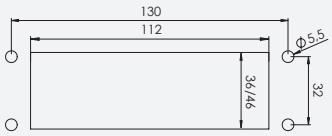
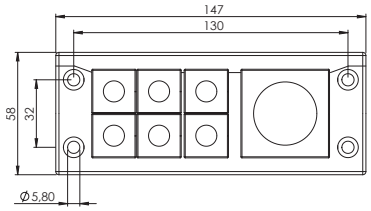
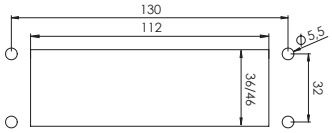
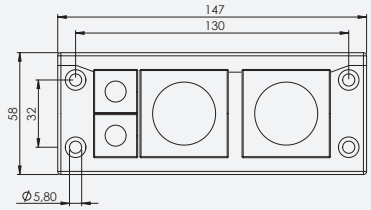
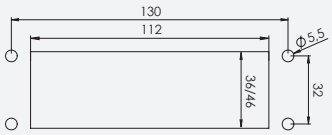
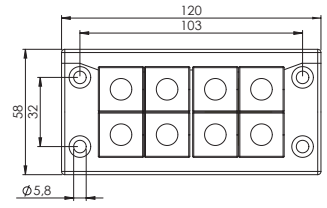
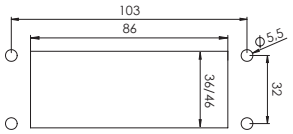
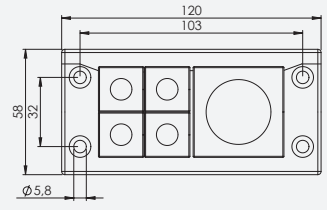
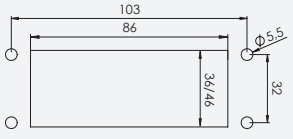
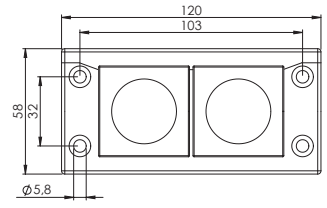
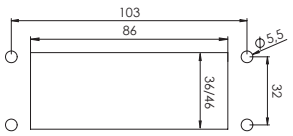


Also available with threaded bushings

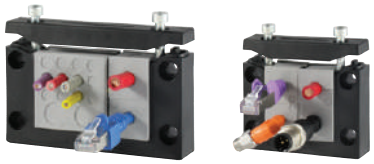
KEL-U 24|4, AT-HA

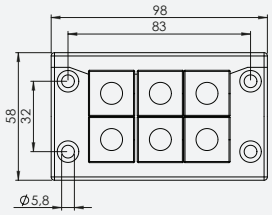
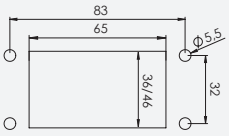
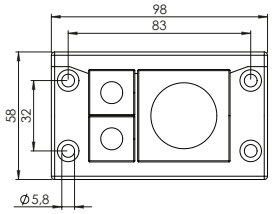
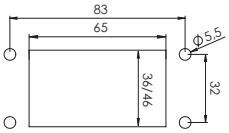
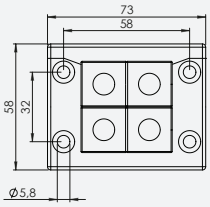
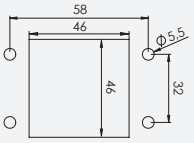
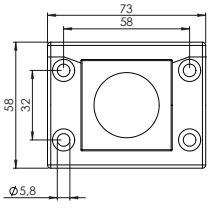
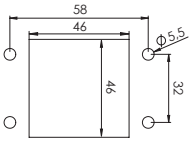
The KEL-U series is also available as a cleanroom version, see from page 413.

KEL-U
Cable Entry Frames
KEL-U 24, KEL-U 16

Description	Cut-out	Type	Cut-out dimensions mm	Grommets small | large	Order No.	PU
		KEL-U 24|10		10 | –	54241	10
		KEL-U 24|10 with V2A screws	36/46 × 112	10 | –	54241.200	10
		KEL-U 24|10 with threaded bushings M4	36/46 × 112	10 | –	54241.400	10
		KEL-U 24|7	36/46 × 112 1.417/1.811 x 4.409"	6 | 1	54247	10
		KEL-U 24|7 with V2A screws	36/46 × 112	6 | 1	54247.200	10
		KEL-U 24|7 with threaded bushings M4	36/46 × 112	6 | 1	54247.400	10
		KEL-U 24|4	36/46 × 112 1.417/1.811 x 4.409"	2 | 2	54244	10
		KEL-U 24|4 with V2A screws	36/46 × 112	2 | 2	54244.200	10
		KEL-U 24|4 with threaded bushings M4	36/46 × 112	2 | 2	54244.400	10
		KEL-U 16|8	36/46 × 86 1.417/1.811 x 3.386"	8 | –	54168	10
		KEL-U 16|8 with V2A screws	36/46 × 86	8 | –	54168.200	10
		KEL-U 16|8 with threaded bushings M4	36/46 × 86	8 | –	54168.400	10
		KEL-U 16|5	36/46 × 86 1.417/1.811 x 3.386"	4 | 1	54165	10
		KEL-U 16|5 with V2A screws	36/46 × 86	4 | 1	54165.200	10
		KEL-U 16|5 with threaded bushings M4	36/46 × 86	4 | 1	54165.400	10
		KEL-U 16|2	36/46 × 86 1.417/1.811 x 3.386"	– | 2	54162	10
		KEL-U 16|2 with V2A screws	36/46 × 86	– | 2	54162.200	10
		KEL-U 16|2 with threaded bushings M4	36/46 × 86	– | 2	54162.400	10

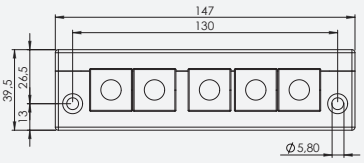
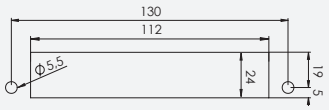
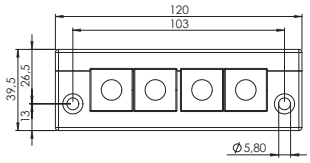
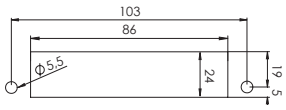
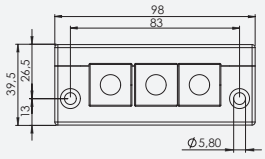
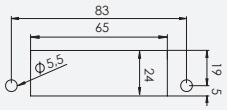
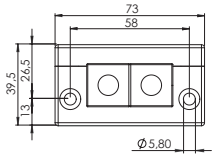
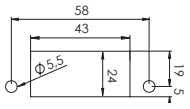
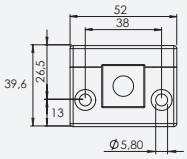
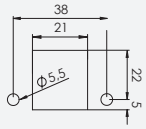
KEL-U
Cable Entry Frames
KEL-U 10, KEL-U-B



Description	Cut-out	Type	Cut-out dimensions mm	Grommets small | large	Order No.	PU
		KEL-U 10|6	36/46 × 65 1.417/1.811 x 2.205"	6 | –	54216	10
		KEL-U 10|6 with V2A screws	36/46 × 65	6 | –	54216.200	10
		KEL-U 10|6 with threaded bushings M4	36/46 × 65	6 | –	54216.400	10
		KEL-U 10|3	36/46 × 65 1.417/1.811 x 2.205"	2 | 1	54212	10
		KEL-U 10|3 with V2A screws	36/46 × 65	2 | 1	54212.200	10
		KEL-U 10|3 with threaded bushings M4	36/46 × 65	2 | 1	54212.400	10
		KEL-U-B4	46 × 46 1.811 x 1.811"	4 | –	54204	10
		KEL-U-B4 with V2A screws	46 × 46	4 | –	54204.200	10
		KEL-U-B4 with threaded bushings M4	46 × 46	4 | –	54204.400	10
		KEL-U-B1	46 × 46 1.811 x 1.811"	– | 1	54206	10
		KEL-U-B1 with V2A screws	46 × 46	– | 1	54206.200	10
		KEL-U-B1 with threaded bushings M4	46 × 46	– | 1	54206.400	10

The KEL-U series is also available as a cleanroom version, see from page 413.

KEL-E
Cable Entry Frames

Description	Cut-out | Drilling template	Type	Cut-out dimensions mm	Grommets small | large	Order No.	PU
		KEL-E5	112 × 24 4.409 x 0.945"	5 | –	42250	10
		KEL-E5 with V2A screws	112 × 24	5 | –	42250.200	10
		KEL-E5 with threaded bushings M4	112 × 24	5 | –	42250.400	10
		KEL-E4	86 × 24 3.386 x 0.945"	4 | –	42259	10
		KEL-E4 with V2A screws	86 × 24	4 | –	42259.200	10
		KEL-E4 with threaded bushings M4	86 × 24	4 | –	42259.400	10
		KEL-E3	65 × 24 2.205 x 0.945"	3 | –	42258	10
		KEL-E3 with V2A screws	65 × 24	3 | –	42258.200	10
		KEL-E3 with threaded bushings M4	65 × 24	3 | –	42258.400	10
		KEL-E2	43 × 24 1.693 x 0.945"	2 | –	42249	10
		KEL-E2 with V2A screws	43 × 24	2 | –	42249.200	10
		KEL-E2 with threaded bushings M4	43 × 24	2 | –	42249.400	10
		KEL-E1	21 x 27	1 | –	42261	10
		KEL-E1 with V2A screws	21 x 27	1 | –	42261.200	10

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KEL-FA Series
Cable Entry Frames
“Fast Assembly”
for a Fast Assembly without Tools

The KEL-FA series (“Fast Assembly”) is a compact system for routing and sealing cables with and without connectors, as well as hoses and pneumatic cables.

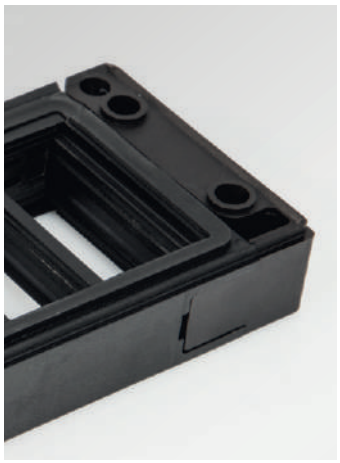
After the frame has been equipped with the KT grommet system, the cover is put on and the two clamping levers are locked with the lower part by pressing them down. The twist-proof construction of the KEL-FA enables an intuitive assembly. The split cable entry allows for the routing of cables with a diameter of 1 mm to 35 mm, providing an IP54 rating.

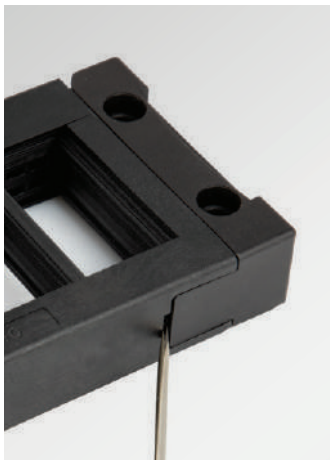
The KEL-FA frames match exactly the cut-out dimensions for 10-, 16- and 24-pin standard industrial connectors. Either a cut-out of 36 mm or 46 mm in height can be chosen depending on the cables and connectors being routed.

The KEL-FA frames can either be screw mounted or simply snapped into the KEL-SNAP frame.

Advantages & Benefits

- Fast assembly without tools
- Warranty on pre-terminated cables remains
- Retrofittings, repairs and maintenance can be done much more quickly
- Very high cable density with multi-hole grommets
- High flexibility with multi-range grommets and the IMAS-CONNECT™ system
- Strain relief according to EN 62444 (with single KT grommets)
- Integrated sealing





Integrated sealing

Specifications

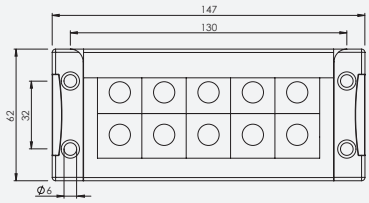
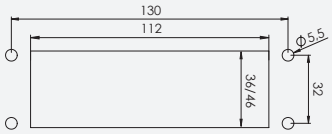
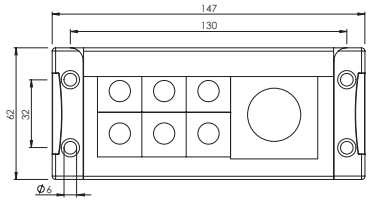
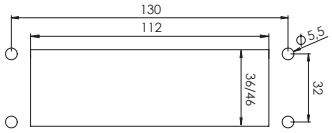
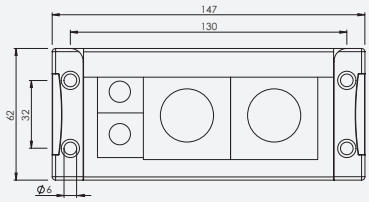
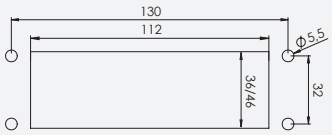
Material	Polyamide (PA)
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529:2014-09)
Temperature	-40°C to +100°C (static)
Properties	Halogen-free, silicone-free
Frame depth	22 mm

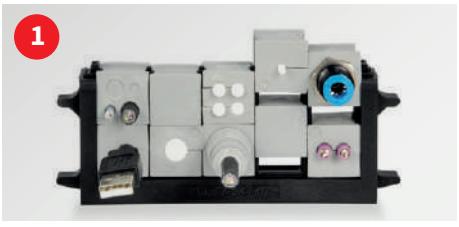
Accessories

KT Cable grommets	74 - 89
AT Adapter grommets	92 - 103
KEL-SNAP Mounting frames	56 - 57
ST Plugs	87

Particularly easy assembly with the KEL-SNAP mounting frame

KEL-FA
Cable Entry Frames
“Fast Assembly”
KEL-FA 24

Description	Cut-out | Drilling template	Type	Cut-out dimensions mm	Grommets small | large	Order No.	PU
		KEL-FA 24|10	36/46 × 112 1.417/1.811 x 4.409"	10 | –	55241	10
		KEL-FA 24|7	36/46 × 112 1.417/1.811 x 4.409"	6 | 1	55247	10
		KEL-FA 24|4	36/46 × 112 1.417/1.811 x 4.409"	2 | 2	55244	10



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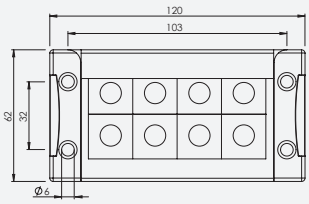
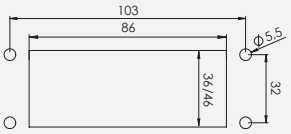
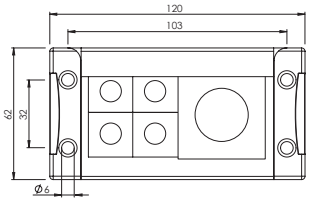
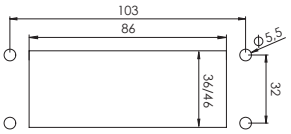
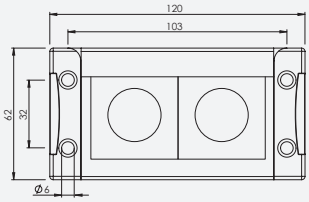
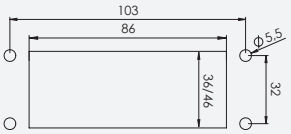
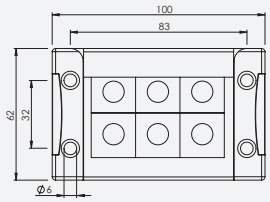
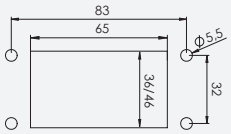
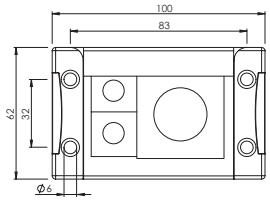
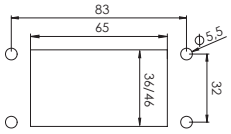
KEL-FA
Cable Entry Frames
“Fast Assembly”
KEL-FA 16

Description	Cut-out | Drilling template	Type	Cut-out dimensions mm	Grommets small | large	Order No.	PU
		KEL-FA 16|8	36/46 × 86 1.417/1.811 x 3.386"	8 | –	55168	10
		KEL-FA 16|5	36/46 × 86 1.417/1.811 x 3.386"	4 | 1	55165	10
		KEL-FA 16|2	36/46 × 86 1.417/1.811 x 3.386"	– | 2	55162	10

KEL-FA
Cable Entry Frames
“Fast Assembly”
KEL-FA 10

Description	Cut-out | Drilling template	Type	Cut-out dimensions mm	Grommets small | large	Order No.	PU
		KEL-FA 10|6	36/46 × 65 1.417/1.811 x 2.205"	6 | –	55216	10
		KEL-FA 10|3	36/46 × 65 1.417/1.811 x 2.205"	2 | 1	55212	10

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KEL Series
Cable Entry Frames with IP54 Rating

The classic KEL is a centrally split cable entry system for routing cables with connectors, providing an IP54 / up to UL Type 12 rating.

The split KT grommet matching the cable diameter is placed around the cable and inserted into the cable entry frame. The split cable entry frames KEL match exactly the cut-out dimensions of 10-, 16- and 24-pin standard industrial connectors. Either a cut-out of 36 mm or 46 mm in height can be chosen depending on the cables being routed. The size KEL-B matches the cut-out dimensions of 46 × 46 mm measuring instruments.

Based on the frame sizes KEL 16 and KEL 24, there are also extended versions with additional middle frames available. Thus allowing a quick, easy and cost effective routing solution for up to 120 cables or hoses.

For tool-less assembly/disassembly of the cable entry frames the snap mounting frame KEL-SNAP can be used. All frame systems come with a rubber gasket.

The version with threaded bushings enables the cable entry frame to be screwed onto the housing from the inside out. This protects against vandalism and tampering with the housing from the outside.

Advantages & Benefits

- Maintain manufacturer's warranty on pre-terminated cables
- Retrofits, repairs and maintenance can be done more easily and quickly
- High cable density, wide variety of grommets
- Strain relief according to EN 62444
- High stability, vibration resistant
- Can be combined with IMAS-CONNECT adapter grommets

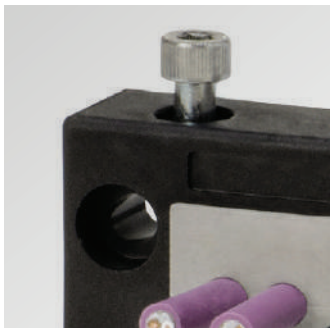
Specifications

Material	Polyamide (PA)
Flame class	UL94-V0
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Operating temperature	- 40°C to + 140°C (static) - 40°F to + 284°F (static)
Properties	Halogen-free, silicone-free
Frame depth	17 mm / 0.669 "

Accessories

KT Cable grommets	74 - 89
AT Adapter grommets	92 - 103
KEL-SNAP Mounting frames	56 - 57
KEL-EMC Grounding mounts	274 - 276
KDR Gland plates	310 - 331
FP Flange plates	332 - 341
MP Module plates	326 - 327
ST Plugs	87

The cable entry frames enable the integration of the adapter grommets IMAS-CONNECT



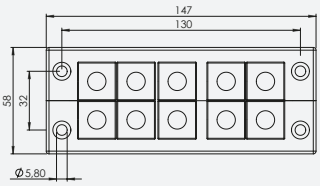
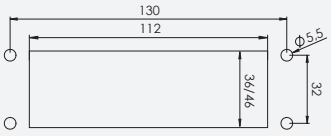
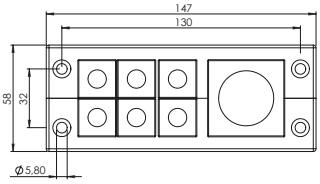
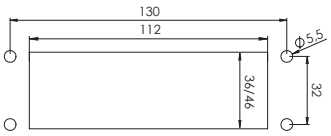
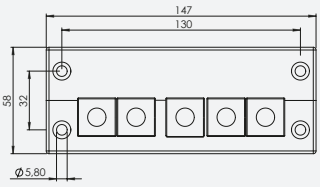
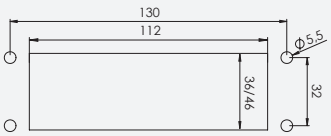
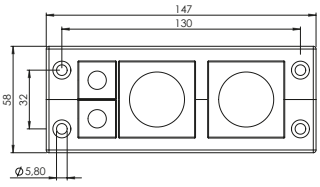
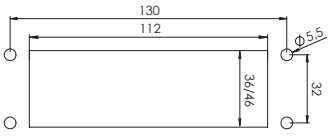
Also available with stainless steel screws (V2A)

Also available with threaded bushings

Split KT grommets

Can be combined with adapter grommets IMAS-CONNECT

KEL
Cable Entry Frames
KEL 24

Description	Cut-out	Type	Cut-out dimensions mm	Grommets small | large	Order No.	PU
		KEL 24|10	36/46 × 112 1.417/1.811 x 4.409"	10 | –	42241	10
		KEL 24|10 with V2A screws	36/46 × 112	10 | –	42241.200	10
		KEL 24|10 with threaded bushings M4	36/46 × 112	10 | –	42241.400	10
		KEL 24|7	36/46 × 112 1.417/1.811 x 4.409"	6 | 1	42247	10
		KEL 24|7 with V2A screws	36/46 × 112	6 | 1	42247.200	10
		KEL 24|7 with threaded bushings M4	36/46 × 112	6 | 1	42247.400	10
		KEL 24|5	36/46 × 112 1.417/1.811 x 4.409"	5 | –	42248	10
		KEL 24|5 with V2A screws	36/46 × 112	5 | –	42248.200	10
		KEL 24|5 with threaded bushings M4	36/46 × 112	5 | –	42248.400	10
		KEL 24|4	36/46 × 86 1.417/1.811 x 3.386"	2 | 2	42244	10
		KEL 24|4 with V2A screws	36/46 × 86	2 | 2	42244.200	10
		KEL 24|4 with threaded bushings M4	36/46 × 86	2 | 2	42244.400	10

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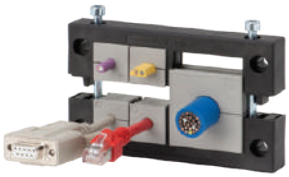
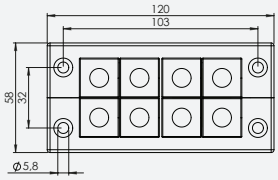
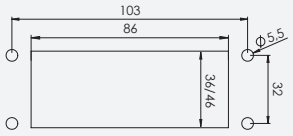
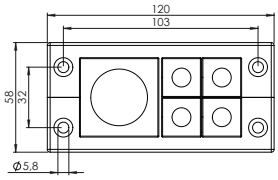
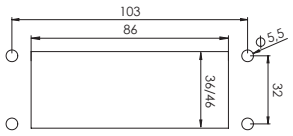
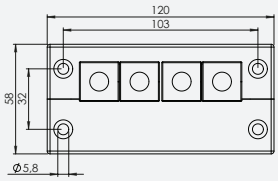
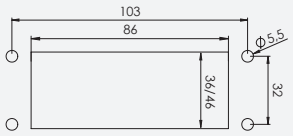
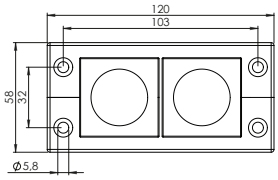
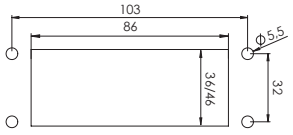
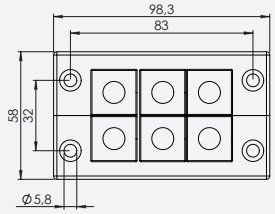
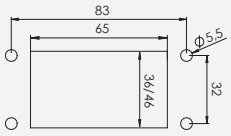
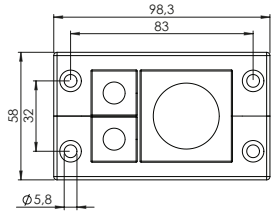
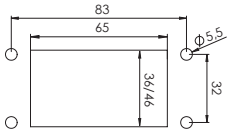
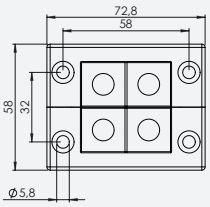
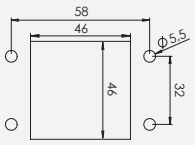
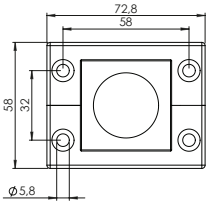
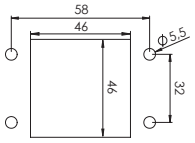
KEL
Cable Entry Frames
KEL 16



Description	Cut-out	Type	Cut-out dimensions mm	Grommets small | large	Order No.	PU
		KEL 16|8	36/46 × 86 1.417/1.811 x 3.386"	8 | –	42168	10
		KEL 16|8 with V2A screws	36/46 × 86	8 | –	42168.200	10
		KEL 16|8 with threaded bushings M4	36/46 × 86	8 | –	42168.400	10
		KEL 16|5	36/46 × 86 1.417/1.811 x 3.386"	4 | 1	42165	10
		KEL 16|5 with V2A screws	36/46 × 86	4 | 1	42165.200	10
		KEL 16|5 with threaded bushings M4	36/46 × 86	4 | 1	42165.400	10
		KEL 16|4	36/46 × 86 1.417/1.811 x 3.386"	4 | –	42164	10
		KEL 16|4 with V2A screws	36/46 × 86	4 | –	42164.200	10
		KEL 16|4 with threaded bushings M4	36/46 × 86	4 | –	42164.400	10
		KEL 16|2	36/46 × 86 1.417/1.811 x 3.386"	– | 2	42162	10
		KEL 16|2 with V2A screws	36/46 × 86	– | 2	42162.200	10
		KEL 16|2 with threaded bushings M4	36/46 × 86	– | 2	42162.400	10

KEL
Cable Entry Frames
KEL 10, KEL-B

Description	Cut-out	Type	Cut-out dimensions mm	Grommets small | large	Order No.	PU
		KEL 10|6	36/46 × 65 1.417/1.811 x 2.205"	6 | –	42216	10
		KEL 10|6 with V2A screws	36/46 × 65	6 | –	42216.200	10
		KEL 10|6 with threaded bushings M4	36/46 × 65	6 | –	42216.400	10
		KEL 10|3	36/46 × 65 1.417/1.811 x 2.205"	2 | 1	42212	10
		KEL 10|3 with V2A screws	36/46 × 65	2 | 1	42212.200	10
		KEL 10|3 with threaded bushings M4	36/46 × 65	2 | 1	42212.400	10
		KEL-B4	46 × 46 1.811 x 1.811"	4 | –	42204	10
		KEL-B4 with V2A screws	46 × 46	4 | –	42204.200	10
		KEL-B4 with threaded bushings M4	46 × 46	4 | –	42204.400	10
		KEL-B1	46 × 46 1.811 x 1.811"	– | 1	42206	10
		KEL-B1 with V2A screws	46 × 46	– | 1	42206.200	10
		KEL-B1 with threaded bushings M4	46 × 46	– | 1	42206.400	10

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KEL Series
Cable Entry Frames, Extended with IP54 Rating

Based on the frame sizes KEL 16 and KEL 24, there are also extended versions with additional middle frames available. Thus allowing a quick, easy and cost effective routing solution for up to 120 cables or hoses.

A flat rubber gasket is included in the shipment.

The version with threaded bushings enables the cable entry frame to be screwed onto the housing from the inside out. This protects against vandalism and tampering with the housing from the outside.

Advantages & Benefits

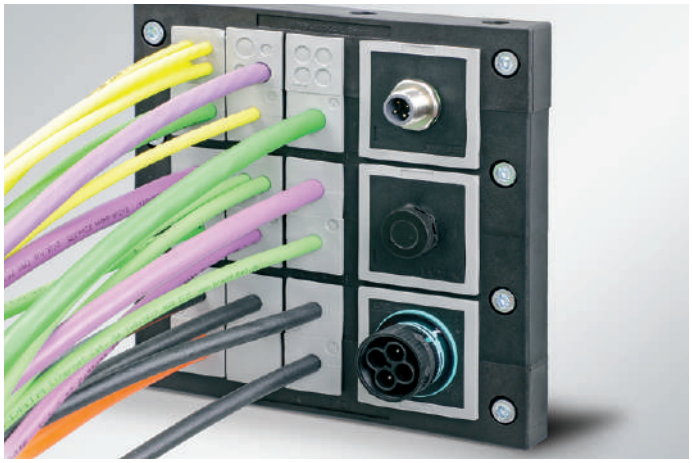
- Maintain manufacturer's warranty on pre-terminated cables
- Retrofits, repairs and maintenance can be done much more easily and quickly
- High cable density
- Strain relief according to EN 62444
- High stability, vibration resistant
- Can be combined with IMAS-CONNECT adapter grommets
- Great variability in the cable grommets

Specifications

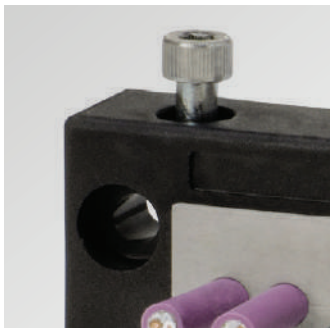
Material	Polyamide (PA)
Flame class	UL94-V0
IP rating	IP54, with gasket and correct selection of cable grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Operating temperature	- 40°C to + 140°C (static) - 40°F to + 284°F (static)
Properties	Halogen-free, silicone-free
Frame depth	17 mm / 0.669 "

Accessories

KT Cable grommets	74 - 89
AT Adapter grommets	92 - 103
KEL-SNAP Mounting frames	56 - 57
KEL-EMC Grounding mounts	274 - 276
ST Plugs	87



The cable entry frames enable the integration of the adapter grommets IMAS-CONNECT



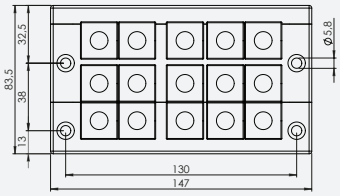
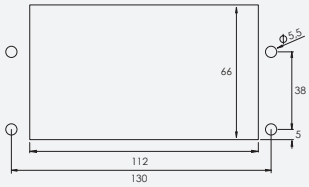
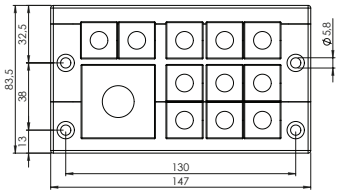
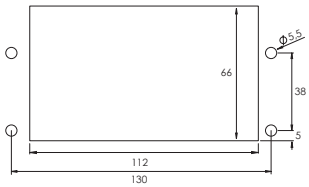
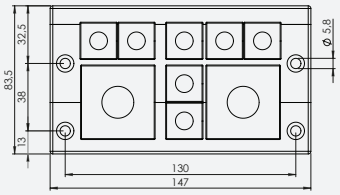
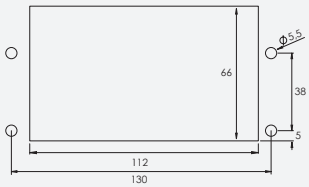
Also available with stainless steel screws (V2A)

Also available with threaded bushings

Split KT grommets

AT-HA

KEL
Cable Entry Frames
KEL-24-E

Description	Cut-out	Type	Cut-out dimensions mm	Grommets small | large	Order No.	PU
		KEL 24|15-E	66 x 112 2.598 x 4.409"	15 | –	42209	1
		KEL 24|15-E with V2A screws	66 x 112	15 | –	42209.200	1
		KEL 24|15-E with threaded bushings M4	66 x 112	15 | –	42209.400	1
		KEL 24|12-E	66 x 112 2.598 x 4.409"	11 | 1	42208	1
		KEL 24|12-E with V2A screws	66 x 112	11 | 1	42208.200	1
		KEL 24|12-E with threaded bushings M4	66 x 112	11 | 1	42208.400	1
		KEL 24|9-E	66 x 112 2.598 x 4.409"	7 | 2	42207	1
		KEL 24|9-E with V2A screws	66 x 112	7 | 2	42207.200	1
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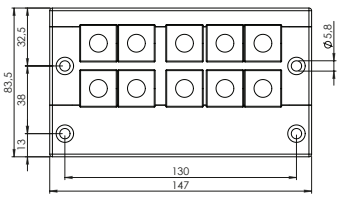	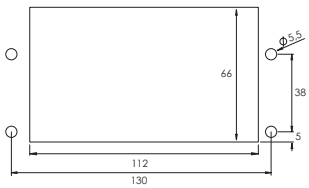	KEL 24|10-E	66 x 112 2.598 x 4.409"	10 | –	49056	1
		KEL 24|10-E with V2A screws	66 x 112	10 | –	49056.200	1
		KEL 24|10-E with threaded bushings M4	66 x 112	10 | –	49056.400	1

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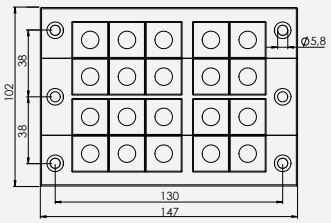
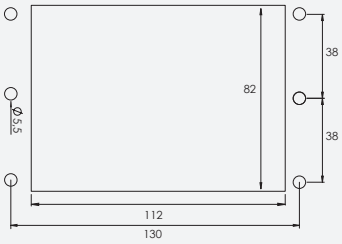
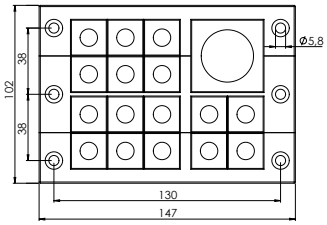
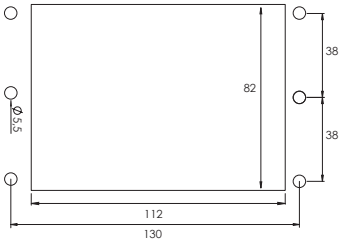
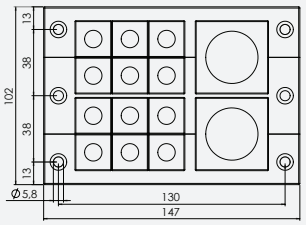
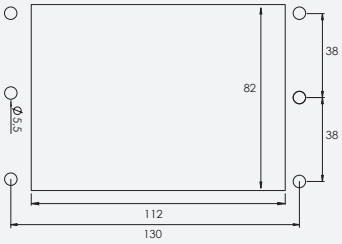
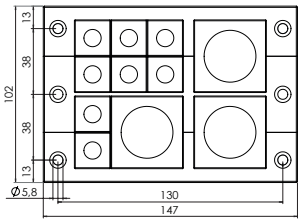
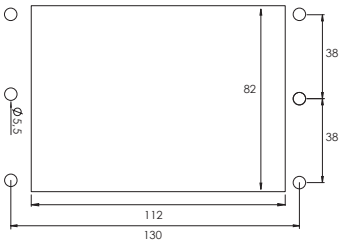
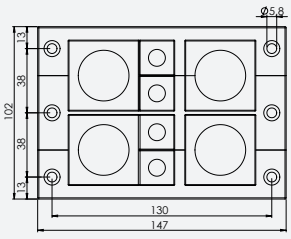
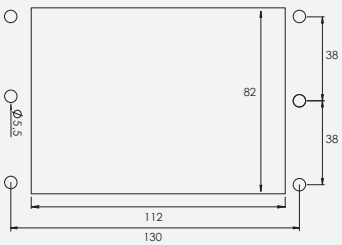
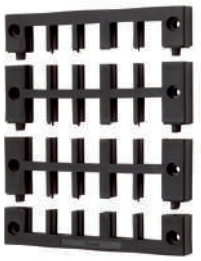
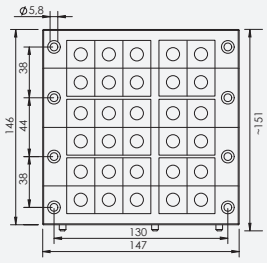
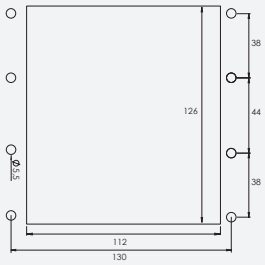
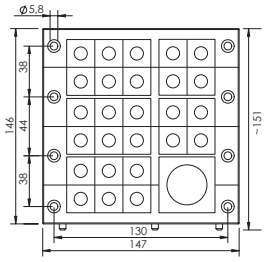
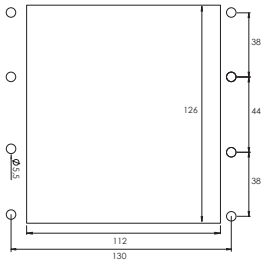
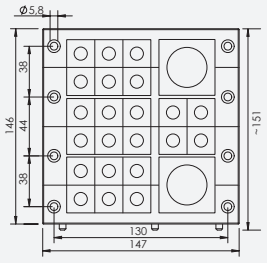
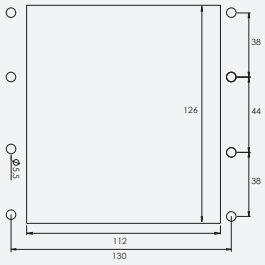
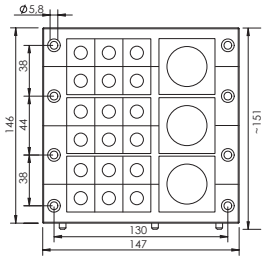
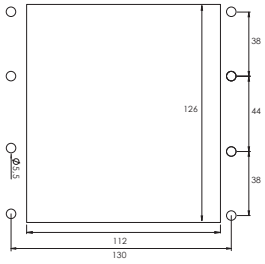
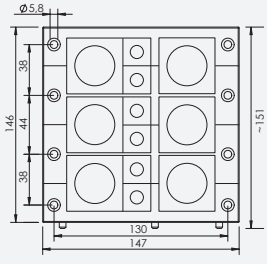
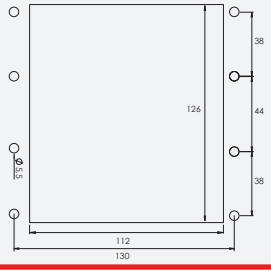
KEL
Cable Entry Frames
KEL-24-MT

Description	Cut-out	Type	Cut-out dimensions mm	Grommets small | large	Order No.	PU
		KEL 24|20-MT	82 x 112 3.228 x 4.409"	20 | –	42232	1
		KEL 24|20-MT with V2A screws	82 x 112	20 | –	42232.200	1
		KEL 24|20-MT with threaded bushings M4	82 x 112	20 | –	42232.400	1
		KEL 24|17-MT	82 x 112 3.228 x 4.409"	16 | 1	42224	1
		KEL 24|17-MT with V2A screws	82 x 112	16 | 1	42224.200	1
		KEL 24|17-MT with threaded bushings M4	82 x 112	16 | 1	42224.400	1
		KEL 24|14-MT	82 x 112 3.228 x 4.409"	12 | 2	42225	1
		KEL 24|14-MT with V2A screws	82 x 112	12 | 2	42225.200	1
		KEL 24|14-MT with threaded bushings M4	82 x 112	12 | 2	42225.400	1
		KEL 24|11-MT	82 x 112 3.228 x 4.409"	8 | 3	42222	1
		KEL 24|11-MT with V2A screws	82 x 112	8 | 3	42222.200	1
		KEL 24|11-MT with threaded bushings M4	82 x 112	8 | 3	42222.400	1
		KEL 24|8-MT	82 x 112 3.228 x 4.409"	4 | 4	42221	1
		KEL 24|8-MT with V2A screws	82 x 112	4 | 4	42221.200	1
		KEL 24|8-MT with threaded bushings M4	82 x 112	4 | 4	42221.400	1

KEL
Cable Entry Frames
KEL-24-2MT



Description	Cut-out	Type	Cut-out dimensions mm	Grommets small | large	Order No.	PU
		KEL 24|30-2MT	126 x 112 4.961 x 4.409"	30 | –	42234	1
		KEL 24|30-2MT with V2A screws	126 x 112	30 | –	42234.200	1
		KEL 24|30-2MT with threaded bushings M4	126 x 112	30 | –	42234.400	1
		KEL 24|27-2MT	126 x 112 4.961 x 4.409"	26 | 1	42233	1
		KEL 24|27-2MT with V2A screws	126 x 112	26 | 1	42233.200	1
		KEL 24|27-2MT with threaded bushings M4	126 x 112	26 | 1	42233.400	1
		KEL 24|24-2MT	126 x 112 4.961 x 4.409"	22 | 2	42227	1
		KEL 24|24-2MT with V2A screws	126 x 112	22 | 2	42227.200	1
		KEL 24|24-2MT with threaded bushings M4	126 x 112	22 | 2	42227.400	1
		KEL 24|21-2MT	126 x 112 4.961 x 4.409"	18 | 3	42226	1
		KEL 24|21-2MT with V2A screws	126 x 112	18 | 3	42226.200	1
		KEL 24|21-2MT with threaded bushings M4	126 x 112	18 | 3	42226.400	1
		KEL 24|12-2MT	126 x 112 4.961 x 4.409"	6 | 6	42223	1
		KEL 24|12-2MT with V2A screws	126 x 112	6 | 6	42223.200	1
		KEL 24|12-2MT with threaded bushings M4	126 x 112	6 | 6	42223.400	1

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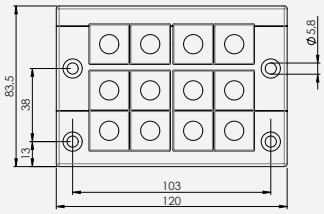
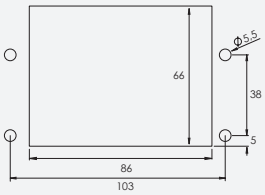
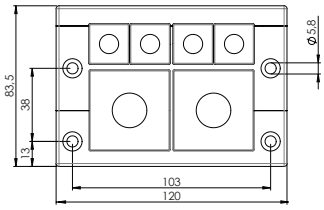
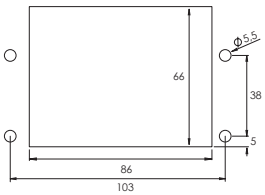
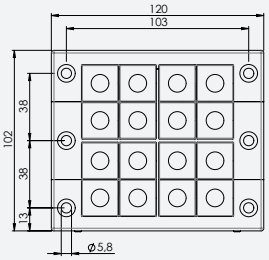
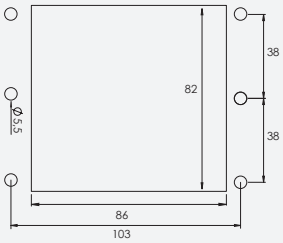
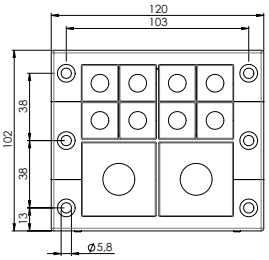
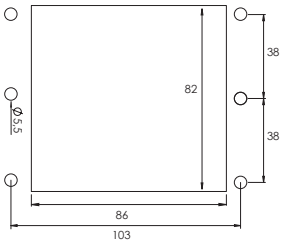
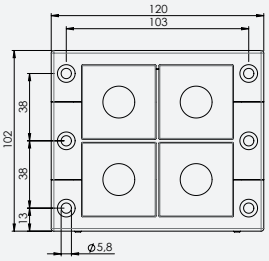
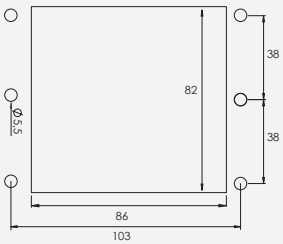
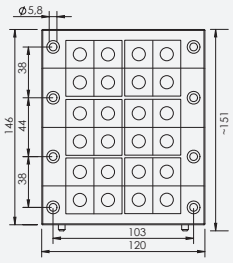
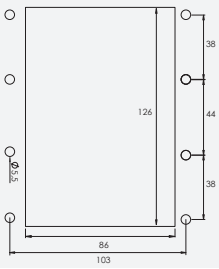
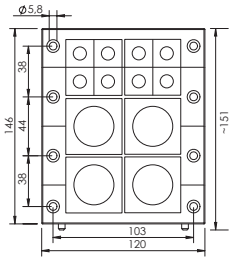
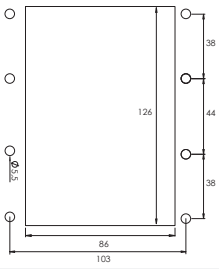
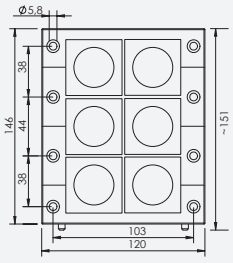
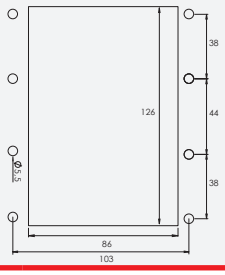
KEL
Cable Entry Frames
KEL 16-E, KEL 16-MT

Description	Cut-out	Type	Cut-out dimensions mm	Grommets small | large	Order No.	PU
		KEL 16|12-E	66 x 86 2.598 x 3.386"	12 | –	42141	1
		KEL 16|12-E with V2A screws	66 x 86	12 | –	42141.200	1
		KEL 16|12-E with threaded bushings M4	66 x 86	12 | –	42141.400	1
		KEL 16|6-E	66 x 86 2.598 x 3.386"	4 | 2	42140	1
		KEL 16|6-E with V2A screws	66 x 86	4 | 2	42140.200	1
		KEL 16|6-E with threaded bushings M4	66 x 86	4 | 2	42140.400	1
		KEL 16|16-MT	82 x 86 3.228 x 3.386"	16 | –	42145	1
		KEL 16|16-MT with V2A screws	82 x 86	16 | –	42145.200	1
		KEL 16|16-MT with threaded bushings M4	82 x 86	16 | –	42145.400	1
		KEL 16|10-MT	82 x 86 3.228 x 3.386"	8 | 2	42144	1
		KEL 16|10-MT with V2A screws	82 x 86	8 | 2	42144.200	1
		KEL 16|10-MT with threaded bushings M4	82 x 86	8 | 2	42144.400	1
		KEL 16|4-MT	82 x 86 3.228 x 3.386"	– | 4	42143	1
		KEL 16|4-MT with V2A screws	82 x 86	– | 4	42143.200	1
		KEL 16|4-MT with threaded bushings M4	82 x 86	– | 4	42143.400	1

KEL
Cable Entry Frames
KEL 16-2MT

Description	Cut-out	Type	Cut-out dimensions mm	Grommets small | large	Order No.	PU
		KEL 16|24-2MT	126 x 86 4.961 x 3.386"	24 | –	42149	1
		KEL 16|24-2MT with V2A screws	126 x 86	24 | –	42149.200	1
		KEL 16|24-2MT with threaded bushings M4	126 x 86	24 | –	42149.400	1
		KEL 16|12-2MT	126 x 86 4.961 x 3.386"	8 | 4	42148	1
		KEL 16|12-2MT with V2A screws	126 x 86	8 | 4	42148.200	1
		KEL 16|12-2MT with threaded bushings M4	126 x 86	8 | 4	42148.400	1
		KEL 16|6-2MT	126 x 86 4.961 x 3.386"	– | 6	42147	1
		KEL 16|6-2MT with V2A screws	126 x 86	– | 6	42147.200	1
		KEL 16|6-2MT with threaded bushings M4	126 x 86	– | 6	42147.400	1

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KEL 183
Cable Entry Frames for Supply Cables
KTMB 183
Grommets for KEL 183

The split cable entry frame KEL 183 enables the user to route cables and tubes with a diameter of up to 75 mm (depending on the frame type) and to seal them in accordance with IP54 / up to UL type 12.

For cables up to 35 mm the cable grommets KT can be used. With these split cable grommets, pre-terminated cables can be routed.

For cables up to 75 mm we have created the grommets KTMB for KEL 183. Those are not split and have a defined area for pushing the cable through.

The blank grommet KTMB-O can accept cable sizes within a specified range. The membrane of the KTMB-O can be pierced or cut (cable diameter minus 10 mm) for cables up to 55 mm in diameter.

All frame systems come with a rubber gasket.

Advantages & Benefits

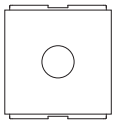
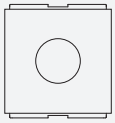
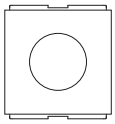
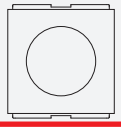
- Installation of cables up to 75 mm
- Grommets allow rigid cables to be properly positioned and oriented during the installation process.
- Retrofits, repairs and maintenance can be done much more easily and quickly
- Can be combined with IMAS-CONNECT adapter grommets
- Great variability in the cable grommets

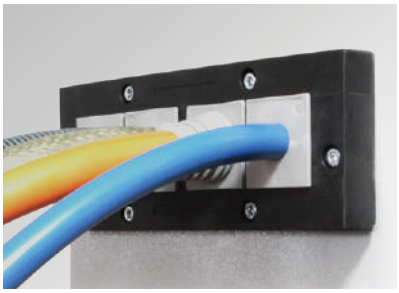
Specifications

Material	KEL 183: Polyamide (PA) KTMB: Elastomere
Flame class	UL94-V0
IP rating	IP54 with gasket and correct selection of the cables (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Operating temperature	KEL 183: - 40°C to + 140°C (static)/ - 40°F to + 284°F (static) KTMB: - 40°C to + 100°C (static)/ - 40°F to + 248°F (static)
Properties	Halogen-free, silicone-free
Frame depth	17 mm / 0.669 "

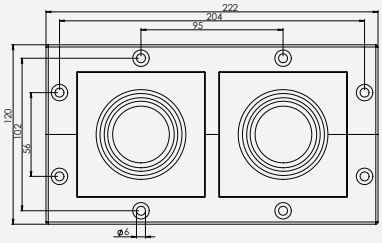
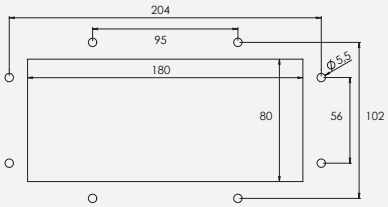
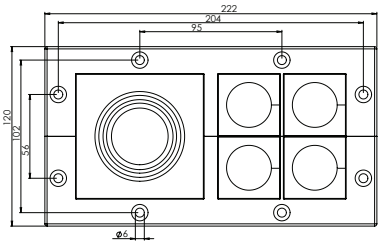
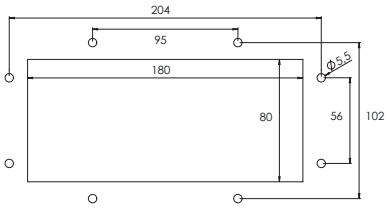
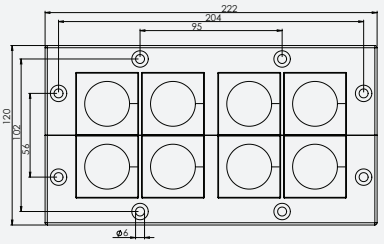
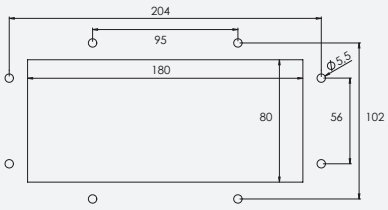
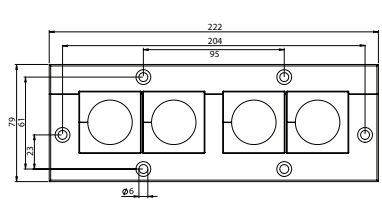
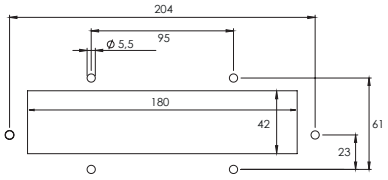
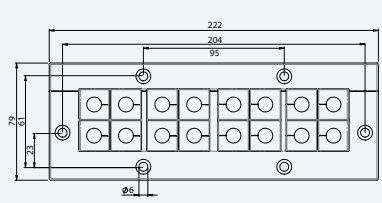
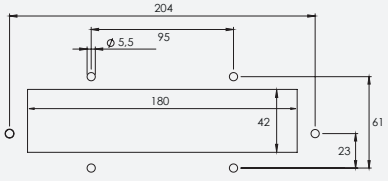
Accessories

KT Cable grommets	74 - 89
AT Adapter grommets	92 - 103
KEL-EMC Grounding mounts	274 - 276
ST Plugs	87

	Type	Order No.	Clamping range	PU
	KTMB-O	41410	Blank grommet	1
	KTMB-P	41415	34 - 44 mm 1.339 - 1.732 "	1
	KTMB-Q	41420	44 - 54 mm 1.732 -2.126 "	1
	KTMB-R	41425	54 - 64 mm 2.126 - 2.513 "	1
	KTMB-S	41430	64 - 75 mm 2.513 - 2.953 "	1



Cable Entry Frames
for Supply Cables up to 75 mm
KEL 183, KEL 183-E

Description	Cut-out | Drilling template	Type	Cut-out mm	Grommets KT KT 183 | KT large	Order No.	PU
		KEL 183|2	180 x 80 mm 7.087 x 3.150"	2 | –	47200	1
		KEL 183|2 with V2A screws	180 x 80 mm 7.087 x 3.150"	2 | –	47200.200	1
		KEL 183|5	180 x 80 mm 7.087 x 3.150"	1 | 4	47220	1
		KEL 183|5 with V2A screws	180 x 80 mm 7.087 x 3.150"	1 | 4	47220.200	1
		KEL 183|8	180 x 80 mm 7.087 x 3.150"	– | 8	47240	1
		KEL 183|8 with V2A screws	180 x 80 mm 7.087 x 3.150"	– | 8	47240.200	1
		KEL 183-E4	180 x 42 mm 7.087 x 1.654"	– | 4	47250	1
		KEL 183-E4 with V2A screws	180 x 42 mm 7.087 x 1.654"	– | 4	47250.200	1
		KEL 183-E16	180 x 42 mm 7.087 x 1.654"	16 KT small	47255	1
		KEL 183-E16 with V2A screws	180 x 42 mm 7.087 x 1.654"	16 KT small	47255.200	1

1
1.11
1.12
1.13
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1.15
1.2
1.21
1.22
1.23
1.24
1.25
1.3

KEL-FL
Cable Entry Frames for Flat Cables
FT
Grommets for Flat Cables

The KEL-FL range enables simple, fast and flexible cable routing and sealing of flat wires, e.g. in elevator construction.

Innovative construction of the grommets compensates for manufacturing inconsistencies in flat cables. Split KT grommets can be utilized to additionally route round cables with connectors. All frame systems come with a rubber gasket.

FT grommets are used to route flat cables, e.g. in elevator construction. Suitable for cable entry frames KEL-FL. Innovative construction of the grommets compensates for manufacturing inconsistencies in flat cables.

Advantages & Benefits

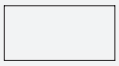
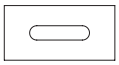
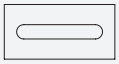
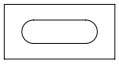
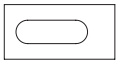
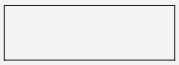
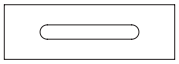
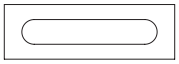
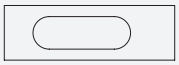
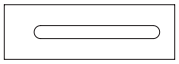
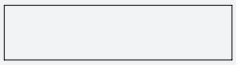
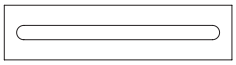
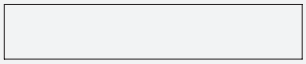
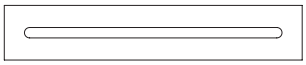
- Routing of flat cables in combination with pre-terminated round cables by using a single KEL-FL cable entry frame
- Routing of flat cables with various dimensions
- Space saving shape

Specifications

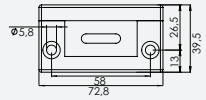
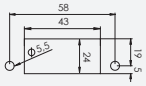
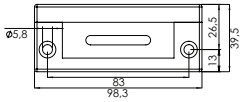
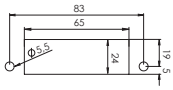
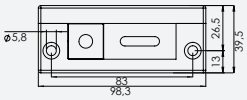
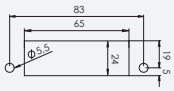
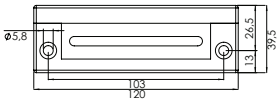
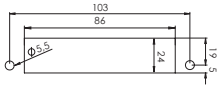
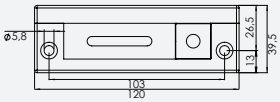
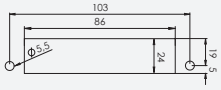
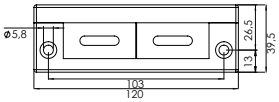
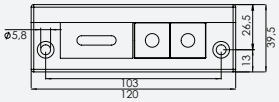
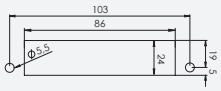
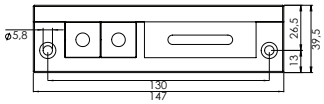
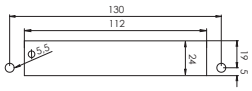
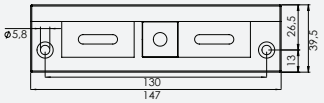
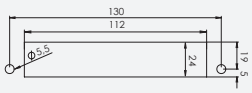
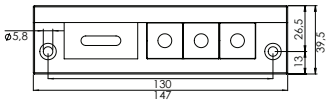
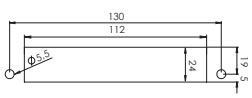
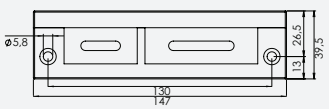
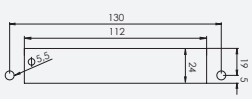
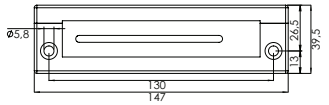
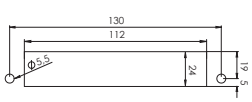
Material	KEL-FL: Polyamide (PA) FT: Elastomer
Flame class	UL94-V0, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets
Temperature	KEL-FL: - 40°C to + 140°C (static) FT: - 40°C to + 100°C (static)
Properties	Halogen-free, silicone-free
Frame depth	17 mm

Accessories

KT Cable grommets, small	74 - 89
KTMB/KT-DPF Cable grommets, small	83 - 85
KEL-EMC Grounding mounts	274 - 276
ST Plugs	87

Description	Type	Order No.	Clamping range	PU
	FT-1|0	46201	Blank grommet	5
	FT-1|A	46210	Width: 19 - 23 mm / 0.748 - 0.906 " Thickness: 5.5 - 6 mm / 0.217 - 0.236 "	5
	FT-1|B	46211	Width: 28 - 33 mm / 1.102 - 1.299 " Thickness: 5.5 - 6 mm / 0.217 - 0.236 "	5
	FT-1|C	46212	Width: 24 - 30 mm / 0.945 - 1.811 " Thickness: 8.5 - 9 mm / 0.335 - 0.354 "	5
	FT-1|E	46214	Width: 19 - 24 mm / 0.748 - 0.945 " Thickness: 6.5 - 7 mm / 0.256 - 0.276 "	5
	FT-1|F	46215	Width: 28 - 33 mm / 1.102 - 1.299 " Thickness: 9 - 9.5 mm / 0.354 0.374 "	5
	FT-2|0	46202	Blank grommet	5
	FT-2|A	46250	Width: 32.5 - 38 mm / 1.28 - 1.496 " Thickness: 5 - 5.5 mm / 0.197 - 0.217 "	5
	FT-2|B	46251	Width: 45 - 50.5 mm / 1.772 - 1.988 " Thickness: 6 - 6.5 mm / 0.236 - 0.256 "	5
	FT-2|C	46252	Width: 47 - 52 mm / 1.85 - 2.047 " Thickness: 9.5 - 10 mm / 0.374 - 0.394 "	5
	FT-2|F	46255	Width: 38 - 43 mm / 1.496 - 1.693 Thickness: 12.5 - 13 mm / 0.492 - 0.512 "	5
	FT-2|G	46256	Width: 49 - 54 mm / 1.929 - 2.126 " Thickness: 5 - 6 mm / 0.197 - 0.236 "	5
	FT-3|0	46203	Blank grommet	5
	FT-3|A	46300	Width: 72 - 77 mm / 2.835 - 3.032 " Thickness: 5 - 5.5 mm / 0.197 - 0.217 "	5
	FT-4|0	46204	Blank grommet	5
	FT-4|A	46330	Width: 85 - 99 mm / 3.346 - 3.898 " Thickness: 4.2 - 5.2 mm / 0.165 - 0.205 "	5

KEL-FL
Cable Entry Frames for Flat Cables

Description	Cut-out | Drilling template	Type	Order No.	Cut-out [mm]	Grommets KT | FT	PU
		KEL-FL|A	46100	43 × 24 1.693 x 0.945 "	0× KT 1× FT-1	10
		KEL-FL|B	46105	65 × 24 2.56 x 0.945 "	0× KT 1× FT-2	10
		KEL-FL|C	46110	65 × 24 2.56 x 0.945 "	1× KT 1× FT-1	10
		KEL-FL|D	46115	86 × 24 3.386 x 0.945 "	0× KT 1× FT-3	10
		KEL-FL|E	46120	86 × 24 3.386 x 0.945 "	1× KT 1× FT-2	10
		KEL-FL|F	46125	86 × 24 3.386 x 0.945 "	0× KT 2× FT-1	10
		KEL-FL|G	46130	86 × 24 3.386 x 0.945 "	2× KT 1× FT-1	10
		KEL-FL|H	46135	112 × 24 4.409 x 0.945 "	2× KT 1× FT-2	10
		KEL-FL|I	46140	112 × 24 4.409 x 0.945 "	1× KT 2× FT-1	10
		KEL-FL|J	46145	112 × 24 4.409 x 0.945 "	3× KT 1× FT-1	10
		KEL-FL|K	46150	112 × 24 4.409 x 0.945 "	1× FT-1 1× FT-2	10
		KEL-FL|L	46155	112 × 24 4.409 x 0.945 "	1× FT-4	10

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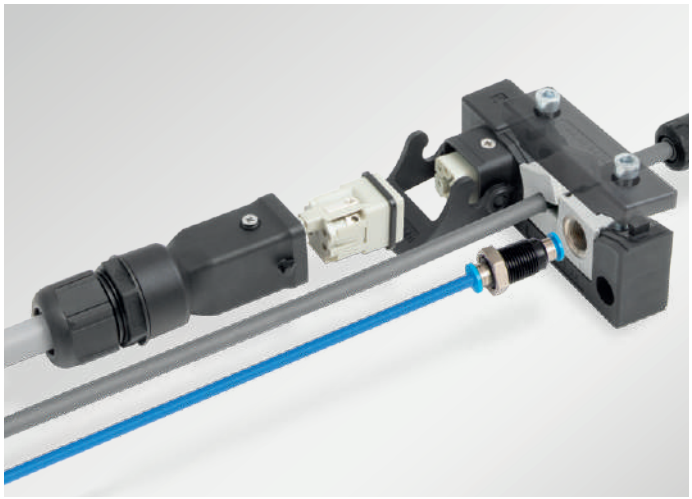
MIS
Split cable entry frame with connection for 3A and 4A connectors

The modular interface system MIS is a split cable entry for cables with and without connectors in combination with industrial connectors 3A or 4A. An industrial connector of size 3A or 4A can be plugged directly onto the frame. Cables with a diameter of 1 to 15 mm can be routed, sealed and strain relieved in accordance with EN 62444. The combination of industrial connector and cable entry saves additional cut-outs and therefore space.

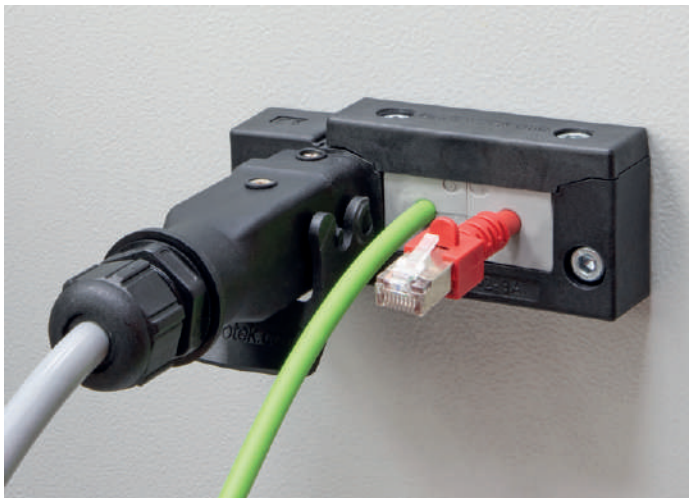
The cable entry frame consists of an add-on housing for the socket insert and space for two cable grommets. The counterpart consists of a housing for the pin insert and a cable gland, either M20 or M25.

The MIS fits onto a KEL-E3 cut-out (65 mm x 24 mm). No additional flat gasket is required for wall mounting thanks to the injected seal on the back. The version with V2A screws enables greater corrosion resistance. The version with threaded bushings allows the cable entry frame to be screwed to the inside of the enclosure.

The MIS is CE-compliant and compatible with numerous insert manufacturers. The MIS can be ordered without inserts, with 3A or with 4A insert sets. A cover for the plug connection and grommets is not included in the scope of delivery.



4A connector and various cables combined in one frame



User benefits

- Market innovation – there is nothing like it
- Space saving through numerous possible combinations of industrial connectors and frame solutions
- Warranty on pre-terminated cables remains
- Connectors and cables can be combined in one frame
- High stability, vibration-proof
- Very easy to assemble
- High flexibility
- Captive screws
- Integrated seal

Features

- IP65 (with correct selection of single and multi cable grommets)
- Strain relief according to EN 62444
- CE-compliant and compatible with numerous insert manufacturers
- UL 94 V-0, self-extinguishing
- Housing with M20 cable gland for cable diameters from 6 – 12 mm or M25 for cable diameters from 13 – 18 mm
- IK04 impact resistance

Specifications

Material	Polyamide (PA)
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54 with protective cover IP65 in plugged-in state
IK impact resistance	IK04
Temperature	-40°C to +120°C (static)
Properties	Halogen free, silicone free

Accessories

Compatible housings and inserts 98

Type	Number of grommets KT small	Insert 3A | 4A	Order No.	PU
MIS-E3|2 KV20	2	–	55500	5
MIS-E3|2 KV20 V2A, with V2A screws	2	–	55500.200	5
MIS-E3|2 KV20 M4, with threaded bushings M4	2	–	55500.400	5
MIS-E3|2 KV25	2	–	55501	5
MIS-E3|2 KV25 V2A, with V2A screws	2	–	55501.200	5
MIS-E3|2 KV25 M4, with threaded bushings M4	2	–	55501.400	5
MIS-E3|2 KV20 3A	2	3A	55502	5
MIS-E3|2 KV20 3A V2A, with V2A screws	2	3A	55502.200	5
MIS-E3|2 KV20 3A M4, with threaded bushings M4	2	3A	55502.400	5
MIS-E3|2 KV25 3A	2	3A	55503	5
MIS-E3|2 KV25 3A V2A, with V2A screws	2	3A	55503.200	5
MIS-E3|2 KV25 3A M4, with threaded bushings M4	2	3A	55503.400	5
MIS-E3|2 KV20 4A	2	4A	55504	5
MIS-E3|2 KV20 4A V2A, with V2A screws	2	4A	55504.200	5
MIS-E3|2 KV20 4A M4, with threaded bushings M4	2	4A	55504.400	5
MIS-E3|2 KV25 4A	2	4A	55505	5
MIS-E3|2 KV25 4A V2A, with V2A screws	2	4A	55505.200	5
MIS-E3|2 KV25 4A M4, with threaded bushings M4	2	4A	55505.400	5

KEL-FG-ER Series
Flange Enclosure for 90° Cable Transit with Integrated Seal and IP65 Rating

The cable entry frames KEL-FG-ER are suited for installation of cables with connectors and conduits at an angle of 90° to the cabinet, enclosure or machine wall, providing an IP65 rating and strain relief according to EN 62444 for cable diameters from 1 to 16 mm (single-hole grommets KT 1 – 15) and 16 to 35 mm (single-hole grommets KT 16 – 34).

Due to the integrated seal on the flange enclosure, a protection class of up to IP65 is provided. An additional flat rubber gasket is included in the shipment.

The KEL-FG-ER-A frame matches exactly the cut-out dimensions for 24-pin standard industrial connectors (36 x 112 mm). The KEL-FG-ER-B is suited for cut-outs 36 × 46 mm.

The single-row version KEL-FG-ER-E is particularly suited for flat connectors. The small frame is ideal for applications with limited space.

The version with threaded bushings enables the cable entry frame to be screwed onto the housing from the inside out. This protects against vandalism and tampering with the housing from the outside.

Advantages & Benefits

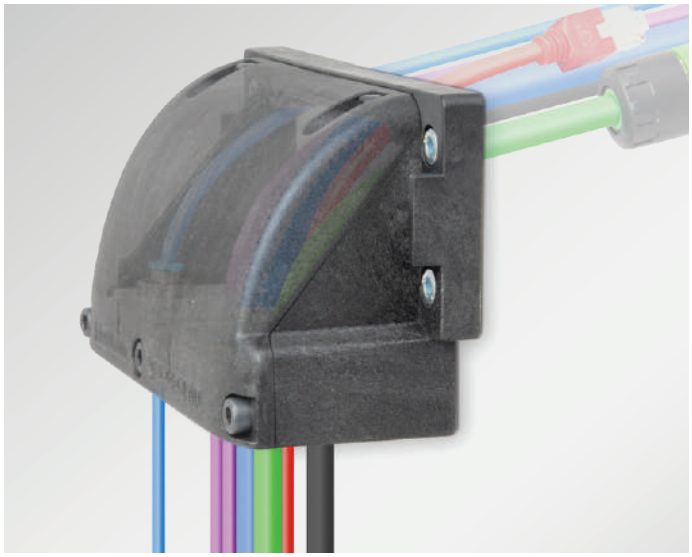
- Integrated seal
- Installation at an angle of 90° to the wall
- Mechanical protection of the cable directly at the place of entry
- Protection against water splashes and drips
- Warranty on pre-terminated cables remains
- Ideal for cables with connectors (max. Ø 35 mm)
- Strain relief according to EN 62444
- High stability, vibration resistant
- Can be combined with IMAS-CONNECT adapter grommets

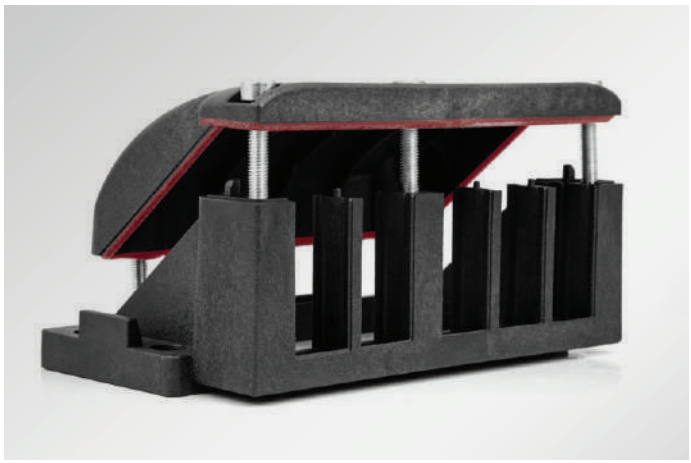
Specifications

Material	Polyamide (PA)
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54, IP55, IP64, IP65 according to EN 60529
Temperature	-40°C to +80°C (static)
Properties	Halogen-free, silicone-free
Mounting height	57.5 mm

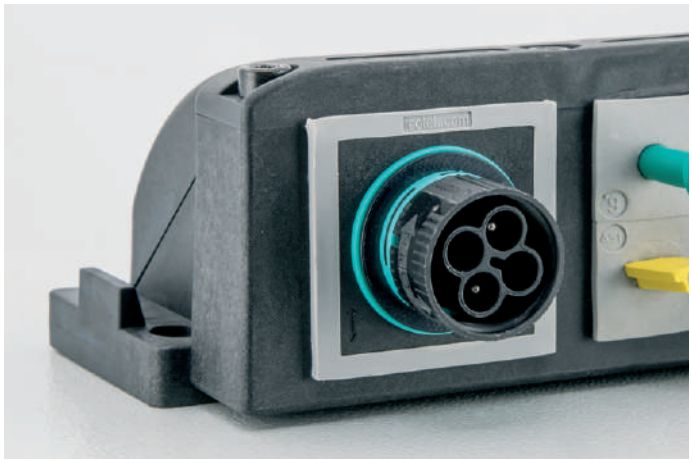
Accessories

KT Cable grommets	74 - 89
AT Adapter grommets	92 - 103
KEL-EMC Grounding mounts	274 - 276
ST Plugs	87





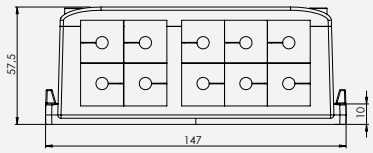
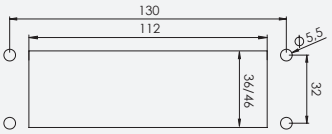
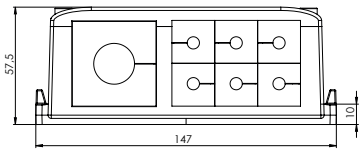
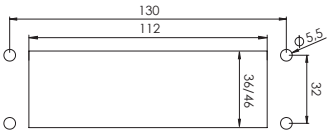
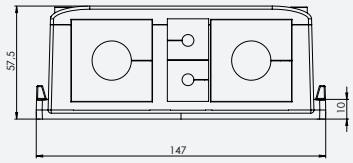
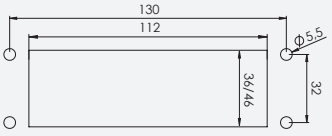
Injected seal, highlighted here in red



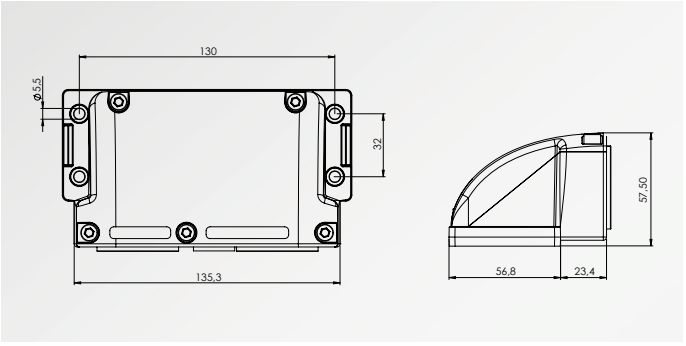
Can be combined with IMAS-CONNECT adapter grommets

KEL-FG-ER
Flange Enclosure for 90° Cable Transit
KEL-FG-ER A

IP65 | cULus | HL3 EN 45545-2 | EN 61373 | UV ISO 4892-2A | RoHS compliant | Made in Germany

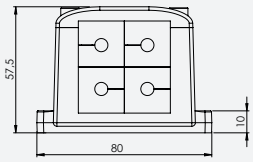
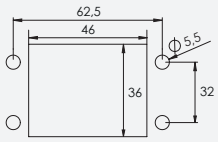
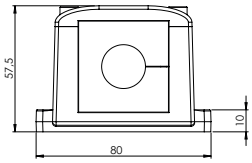
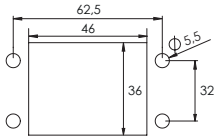
Description	Cut-out | Drilling template	Type	Cut-out mm	Grommets small | large	Order No.	PU
		KEL-FG-ER A10	36 x 112 1.417 x 4.409"	10 | –	42340	1
		KEL-FG-ER A10 with V2A screws	36 x 112 1.417 x 4.409"	10 | –	42340.200	1
		KEL-FG-ER A10 with threaded bushings M4	36 x 112 1.417 x 4.409"	10 | –	42340.400	1
		KEL-FG-ER A7	36 x 112 1.417 x 4.409"	6 | 1	42341	1
		KEL-FG-ER A7 with V2A screws	36 x 112 1.417 x 4.409"	6 | 1	42341.200	1
		KEL-FG-ER A7 with threaded bushings M4	36 x 112 1.417 x 4.409"	6 | 1	42341.400	1
		KEL-FG-ER A4	36 x 112 1.417 x 4.409"	2 | 2	42342	1
		KEL-FG-ER A4 with V2A screws	36 x 112 1.417 x 4.409"	2 | 2	42342.200	1
		KEL-FG-ER A4 with threaded bushings M4	36 x 112 1.417 x 4.409"	2 | 2	42342.400	1

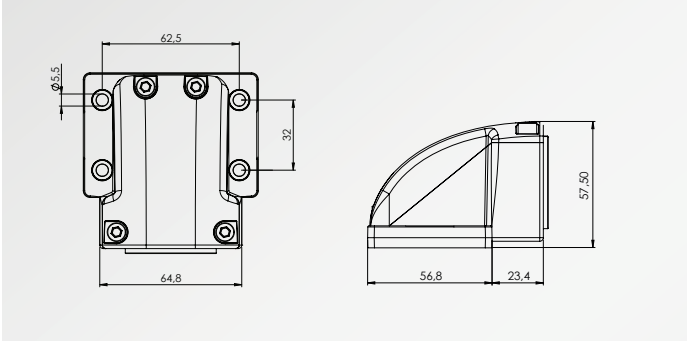
Split KT grommets



KEL-FG-ER
Flange Enclosure for 90° Cable Transit
KEL-FG-ER B

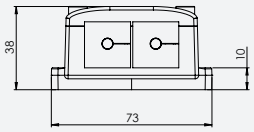
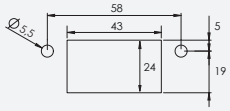
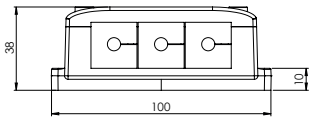
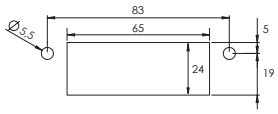
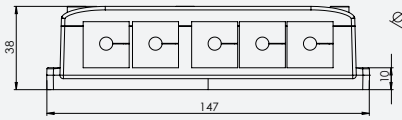
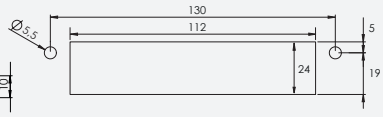
IP65 | c UL us | HL3 EN 45545-2 | EN 61373 | UV ISO 4892-2A | RoHS compliant | Made in Germany

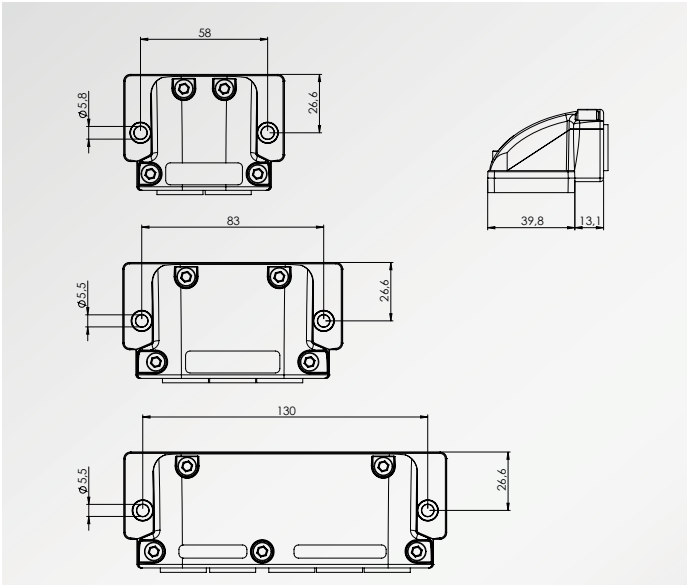
Description	Cut-out | Drilling template	Type	Cut-out mm	Grommets small | large	Order No.	PU
		KEL-FG-ER B4	46 x 36	4 | –	42344	1
		KEL-FG-ER B4 with V2A screws	46 x 36	4 | –	42344.200	1
		KEL-FG-ER B4 with threaded bushings M4	46 x 36	4 | –	42344.400	1
		KEL-FG-ER B1	46 x 36	– | 1	42343	1
		KEL-FG-ER B1 with V2A screws	46 x 36	– | 1	42343.200	1
		KEL-FG-ER B1 with threaded bushings M4	46 x 36	– | 1	42343.400	1



KEL-FG-ER
Flange Enclosure for 90° Cable Transit
KEL-FG-ER E

IP65 | cULus | HL3 EN 45545-2 | EN 61373 | UV ISO 4892-2A | RoHS compliant | Made in Germany

Description	Cut-out | Drilling template	Type	Cut-out mm	Grommets small | large	Order No.	PU
		KEL-FG-ER E2	43 x 24 1.693 x 0.945"	2 | –	42345	5
		KEL-FG-ER E2 with V2A screws	43 x 24 1.693 x 0.945"	2 | –	42345.200	5
		KEL-FG-ER E2 with threaded bushings M4	43 x 24 1.693 x 0.945"	2 | –	42345.400	5
		KEL-FG-ER E3	65 x 24 2.205 x 0.945"	3 | –	42346	5
		KEL-FG-ER E3 with V2A screws	65 x 24 2.205 x 0.945"	3 | –	42346.200	5
		KEL-FG-ER E3 with threaded bushings M4	65 x 24 2.205 x 0.945"	3 | –	42346.400	5
		KEL-FG-ER E5	112 x 24 4.409 x 0.945"	5 | –	42347	5
		KEL-FG-ER E5 with V2A screws	112 x 24 4.409 x 0.945"	5 | –	42347.200	5
		KEL-FG-ER E5 with threaded bushings M4	112 x 24 4.409 x 0.945"	5 | –	42347.400	5



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KEL-FG Series
Flange Enclosures for 90° Cable Transit with IP54 Rating

The cable entry frames KEL-FG are suited for installation, sealing and strain relief of cables with connectors and conduits at an angle of 90° to the cabinet, enclosure or machine wall.

The KEL-FG-A frame matches exactly the cut-out dimensions for 24-pin standard industrial connectors. For tool-less assembly/disassembly of the KEL-FG-A the snap mounting frame KEL-SNAP 24 can be used. The KEL-FG-B is suited for cut-outs 36 × 46 mm.

The single-row versions KEL-FG-E are particularly suited for flat connectors. The small frames are ideal for applications with limited space.

The version with threaded bushings enables the cable entry frame to be screwed onto the housing from the inside out. This protects against vandalism and tampering with the housing from the outside.

All frame systems come with a rubber gasket.

Advantages & Benefits

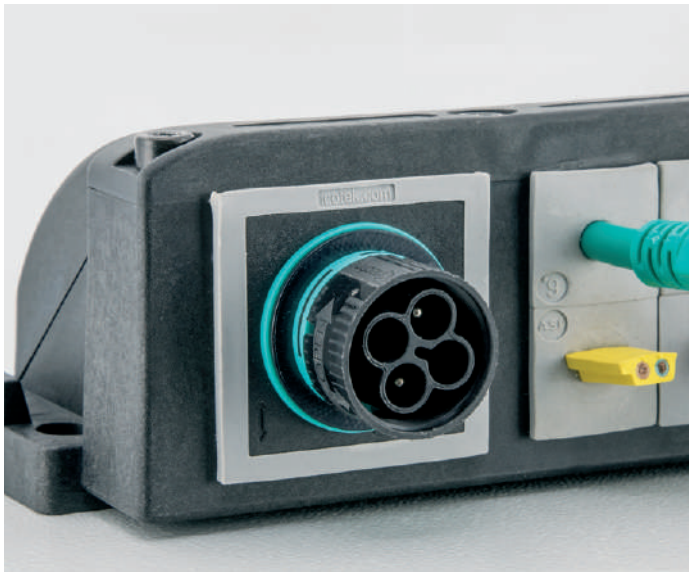
- Installation at an angle of 900 to the wall
- Mechanical protection of cable directly at the place of entry
- Protection against water spray and drips
- Maintain manufacturer's warranty on pre-terminated cables
- Strain relief according to EN 62444
- High stability, vibration resistant
- Can be combined with IMAS-CONNECT adapter grommets

Specifications

Material	Polyamide (PA)
Flame class	UL94-V0, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets
Temperature	- 40°C to + 140°C (static)
Properties	Halogen-free, silicone-free

Accessories

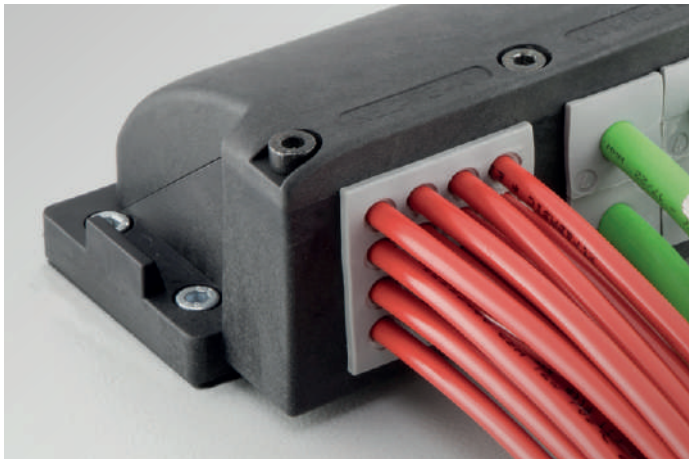
KT Cable grommets	74 - 89
AT Adapter grommets	92 - 103
KEL-SNAP Mounting frames	56 - 57
KEL-EMC Grounding mounts	274 - 276
ST Plugs	87



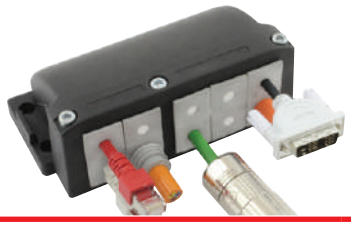
The cable entry frames enable the integration of the IMAS-CONNECT™ adapter grommets

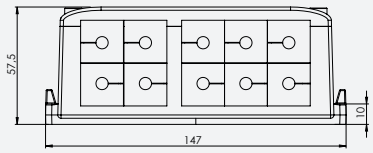
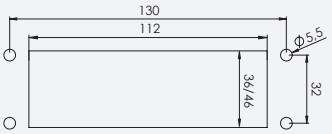
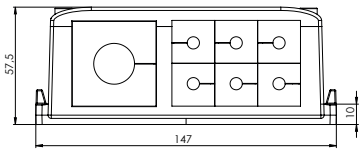
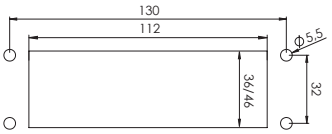
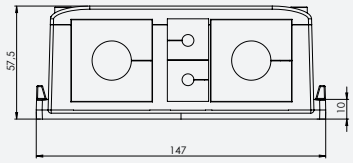
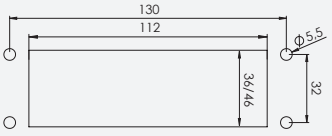
Also available with stainless steel screws (V2A)

Also available with threaded bushings

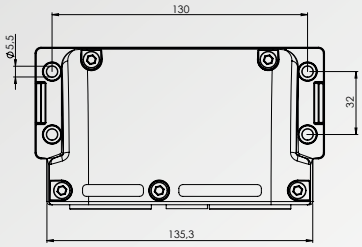


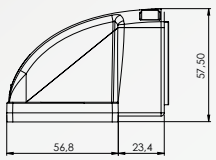
KEL-FG
Flange Enclosures for 90° Cable Transit
KEL-FG-A



Description	Cut-out | Drilling template	Type	Cut-out mm	Grommets small | large	Order No.	PU
		KEL-FG-A10	36 × 112 1.417 x 4.409"	10 | –	42320	1
		KEL-FG-A10 with V2A screws	36 × 112 1.417 x 4.409"	10 | –	42320.200	1
		KEL-FG-A10 with threaded bushings M4	36 × 112 1.417 x 4.409"	10 | –	42320.400	1
		KEL-FG-A7	36 × 112 1.417 x 4.409"	6 | 1	42322	1
		KEL-FG-A7 with V2A screws	36 × 112 1.417 x 4.409"	6 | 1	42322.200	1
		KEL-FG-A7 with threaded bushings M4	36 × 112 1.417 x 4.409"	6 | 1	42322.400	1
		KEL-FG-A4	36 × 112 1.417 x 4.409"	2 | 2	42324	1
		KEL-FG-A4 with V2A screws	36 × 112 1.417 x 4.409"	2 | 2	42324.200	1
		KEL-FG-A4 with threaded bushings M4	36 × 112 1.417 x 4.409"	2 | 2	42324.400	1

KEL-FG-A





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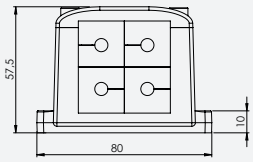
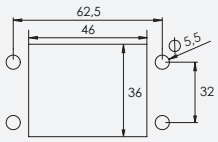
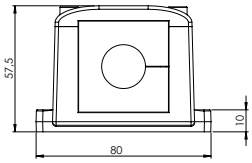
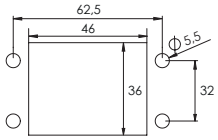
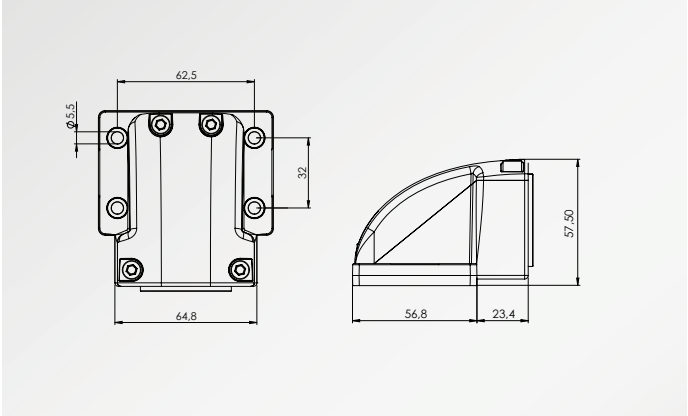
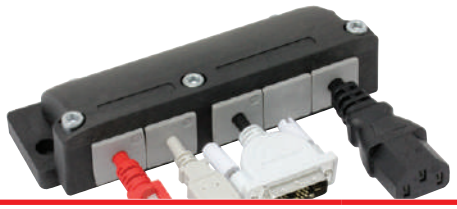
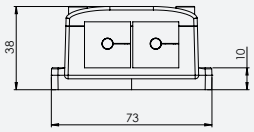
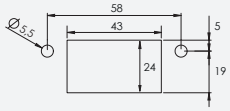
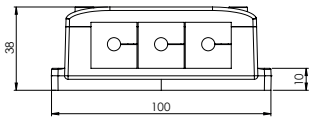
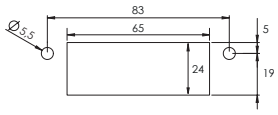
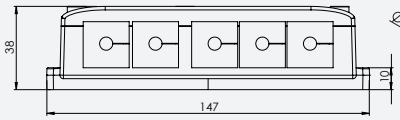
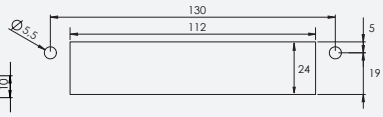
KEL-FG
Flange Enclosures for 90° Cable Transit
KEL-FG-B

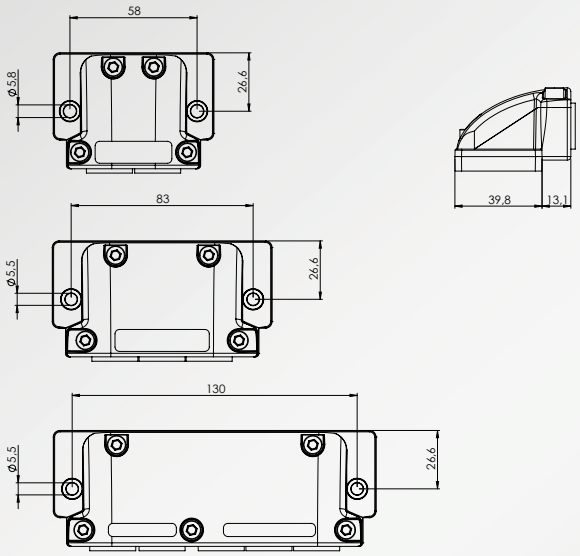
Description	Cut-out | Drilling template	Type	Cut-out mm	Grommets small | large	Order No.	PU
		KEL-FG-B4	46 x 36 1.811 x 1.417"	4 | –	42330	1
		KEL-FG-B4 with V2A screws	46 x 36 1.811 x 1.417"	4 | –	42330.200	1
		KEL-FG-B4 with threaded bushings M4	46 x 36 1.811 x 1.417"	4 | –	42330.400	1
		KEL-FG-B1	46 x 36 1.811 x 1.417"	– | 1	42332	1
		KEL-FG-B1 with V2A screws	46 x 36 1.811 x 1.417"	– | 1	42332.200	1
		KEL-FG-B1 with threaded bushings M4	46 x 36 1.811 x 1.417"	– | 1	42332.400	1



KEL-FG
Flange Enclosures for 90° Cable Transit
KEL-FG-E



Description	Cut-out | Drilling template	Type	Cut-out mm	Grommets small | large	Order No.	PU
		KEL-FG-E2	43 x 24 1.693 x 0.945"	2 | –	42333	5
		KEL-FG-E2 with V2A screws	43 x 24 1.693 x 0.945"	2 | –	42333.200	5
		KEL-FG-E2 with threaded bushings M4	43 x 24 1.693 x 0.945"	2 | –	42333.400	5
		KEL-FG-E3	65 x 24 2.205 x 0.945"	3 | –	42334	5
		KEL-FG-E3 with V2A screws	65 x 24 2.205 x 0.945"	3 | –	42334.200	5
		KEL-FG-E3 with threaded bushings M4	65 x 24 2.205 x 0.945"	3 | –	42334.400	5
		KEL-FG-E5	112 x 24 4.409 x 0.945"	5 | –	42336	5
		KEL-FG-E5 with V2A screws	112 x 24 4.409 x 0.945"	5 | –	42336.200	5
		KEL-FG-E5 with threaded bushings M4	112 x 24 4.409 x 0.945"	5 | –	42336.400	5



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KEL-FW
Bulkhead
for 90° Cable Transit
with IP65 Rating

With the new bulkhead KEL-FW, cables can be routed at a 90° angle over a large bending radius. The hinged cover is firmly connected to the housing by a hinge and is therefore captive. This makes the system very easy and quick to mount. The KEL-FW is first screwed to the enclosure using the two rear holes and then fitted with the required cable grommets. The cover is then folded down, locked in place and screwed to the enclosure using the two front holes.

The KEL-FW is fitted with an integrated seal to achieve the high protection rating of IP65. An additional flat gasket for wall mounting is included in the shipment.

Cables with and without connectors up to a diameter of 35 mm can be routed and strain-relieved according to DIN EN 62444. Retrofitting and maintenance can be carried out quickly and easily.

Advantages

- Captive cover
- Integrated seal
- Cable entry at 90° to the enclosure
- Large bending radius of the routed cables possible (r max. = 150 mm), ideal for rigid cables
- Mechanical protection of the cable directly at the place of entry
- Protection against water splashes and drips
- Warranty on pre-terminated cables remains
- Retrofittings and maintenance can be done quickly and easily
- Ideal for cables with connectors (max. Ø 35 mm)
- Strain relief according to EN 62444
- High stability, vibration resistant
- Can be combined with IMAS-CONNECT adapter grommets

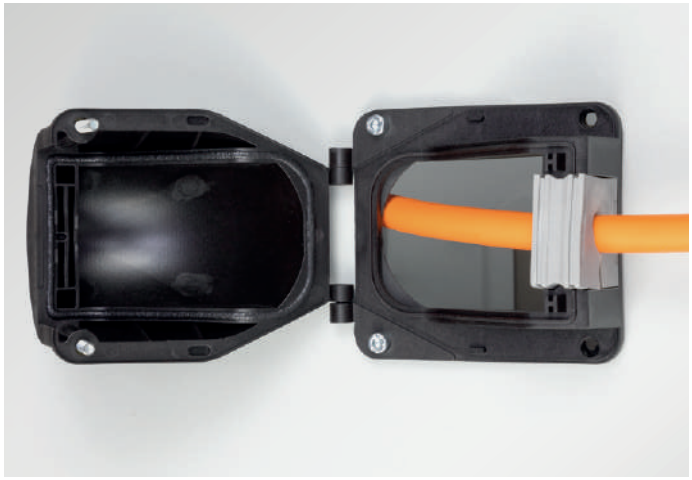
Specifications

Material	Polyamide (PA)
Colour	Black (RAL 9005)
IP rating	IP65 (certified acc. to EN 60529)
Flame class	UL 94 V-0, self-extinguishing
Temperature	-40°C to +90°C (static)
Properties	Halogen free, silicone free

Accessories

CONFiX Sheet metal punches	398
KT Cable grommets	74 - 89
IMAS-CONNECT Adapter grommets	92 - 103

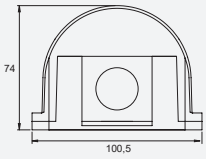
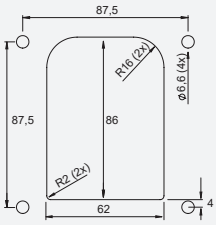
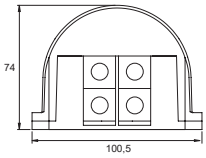
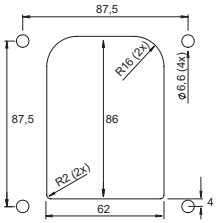
Captive cover for easy assembly



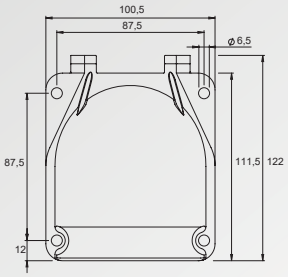
Integrated seal to achieve the high protection rating of IP65

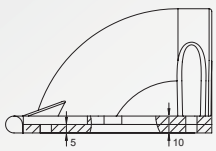
KEL-FW
Bulkhead for 90° Cable Transit with IP65 Rating

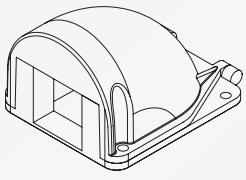
IP65 | cULus | HL3 EN 45545-2 | ECOLAB certified | RoHS compliant | Made in Germany

Description	Cut-out | Drilling template	Type	Dimension A x B x H mm	Cut-out mm	Bore ø	Grommets small | large	Order No.	PU
		KEL-FW-B1	121,5 x 100,5 x 75,0	62 x 86 mm	4 x 6,5 mm	– | 1	42460	1
		KEL-FW-B4	121,5 x 100,5 x 75,0	62 x 86 mm	4 x 6,5 mm	4 | –	42461	1

Matching sheet metal punches on p. 398







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KEL-SNAP-S
Split Snap-On Mounting Frames with IP54 Rating

IP54

icotek also offers the proven snap-on frame KEL-SNAP as a split version KEL-SNAP-S. The snap-on frames enable quick and tool-less assembly of the KEL-FA/KEL/KEL-U/KEL-QUICK/KEL-FG-A cable entry sytems.

The KEL-SNAP becomes even more versatile with the "S" version. Due to the divisibility of the snap-on frame, it can also be retrofitted without any problems. If an already mounted KEL-SNAP is damaged, it can be replaced by a split frame without having to disconnect all the cables that have already been fed through and without having to dismantle the existing KEL.

Advantages & Benefits

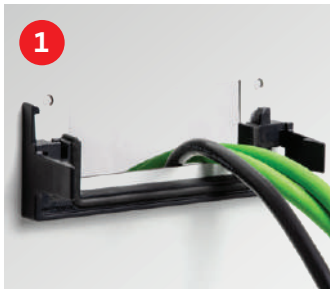
- Subsequent assembly possible
- Upon disassembly (e.g. maintenance) screwing and unscrewing of the cable entry frame is not necessary
- Drilling template identical to cable entry frame
- Integrated gasket
- Previously assembled cable harnesses are quickly and easily attached
- There is no need to thread the cables through the snap-on frame as the divisible frame can be snapped together when the cables have already been passed through the cut-out

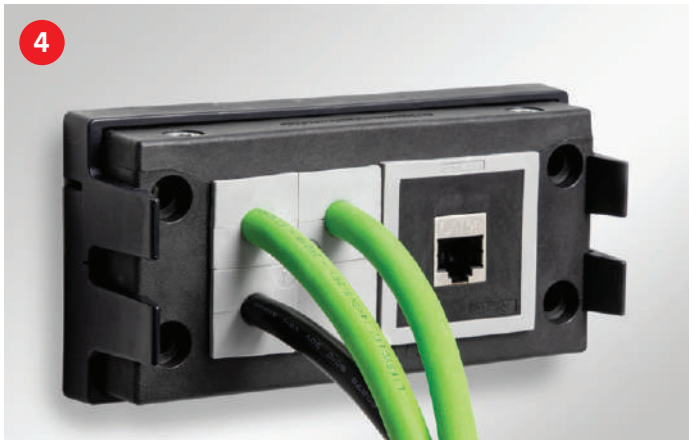
Specifications

Material	Polyamide (PA)
IP rating	IP 54
Flame class	UL 94 V-0, self-extinguishing
Temperature	-40°C bis +140°C (static)
Properties	silicone free, halogen free

Compatible with

KEL-FA Cable entry frames	24 - 27
KEL Cable entry frames	28 - 37
KEL-U Cable entry frames	20 - 22
KEL-FG Flange enclosure	48 - 49
KEL-QUICK Cable entry frames	106 - 109
MP Module plates	326 - 327
BPK-SNAP Blank plates	344



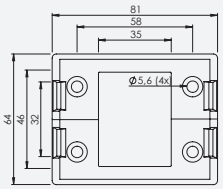
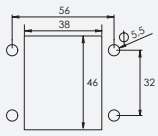
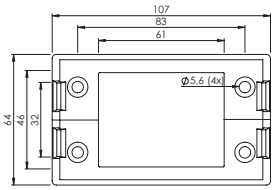
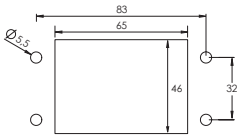
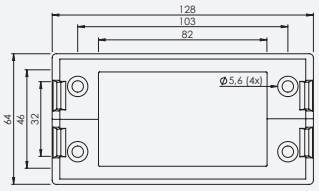
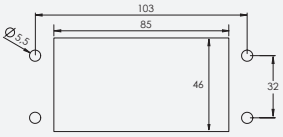
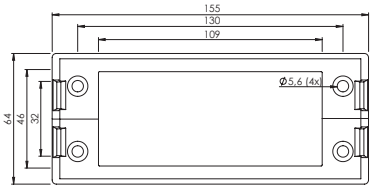
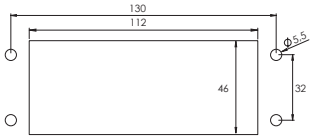


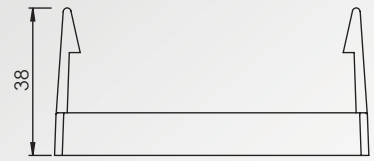
Integrated circumferential seal (IP54)

Snap-in locking hook

KEL-SNAP-S
Splittable Snap-On Mounting Frame

IP54 | EN ISO 14644 | PNEUMATICS | ECOLAB certified | RoHS compliant | Made in Germany

Description	Cut-out | Drilling template	Type	Cut-out [mm]	Suitable for	Order No.	PU
		KEL-SNAP-S-B	46 × 38 1.811 x 1.496 "	KEL-B KEL-U-B KEL-QUICK-B	42063	10
		KEL-SNAP-S-10	46 × 65 1.811 x 2.56 "	KEL 10 KEL-U 10 KEL-QUICK 10	42062	10
		KEL-SNAP-S-16	46 × 85 1.811 x 3.346 "	KEL 16 KEL-U 16 KEL-QUICK 16	42061	10
		KEL-SNAP-S-24	46 × 112 3.504 x 4.409 "	KEL 24 KEL-U 24 KEL-FG-A KEL-QUICK 24	42060	10



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KEL-SNAP
Snap-On Mounting Frames with IP54 Rating

The patented KEL-SNAP frame provides a quick snap-in assembly of the KEL-FA / KEL / KEL-U / KEL-QUICK / KEL-FG-A cable entry systems. Control panels, cabinets or machines can be equipped with the KEL-SNAP frame at delivery, allowing a simple push in of the KEL frame when routing cables and conduit. Perfect for enclosures that are maintenance intensive or for an install at a later date.

A cut-out of 46 mm can also be chosen instead of 36 mm. Thus prefabricated multi-pin connectors can be used.

Advantages & Benefits

- Upon disassembly (e.g. maintenance) screwing and unscrewing of KEL frame is not necessary
- Previously assembled KEL frames are quickly and easily attached
- Integrated gasket
- Mounting template identical to KEL frame (except KEL-SNAP-B)

Specifications

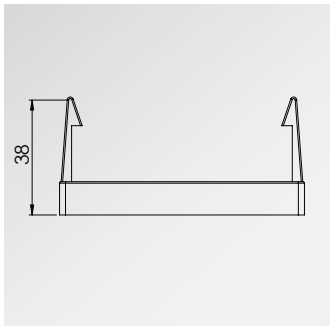
Material	Polyamide (PA)
Flame class	UL94-V0, self-extinguishing
IP rating	IP54 (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Operating temperature	- 40°C to + 140°C (static) - 40°F to + 284°F (static)
Properties	Halogen-free, silicone-free

Compatible with

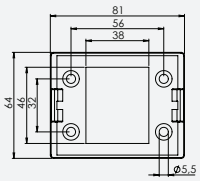
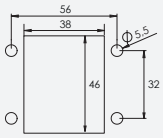
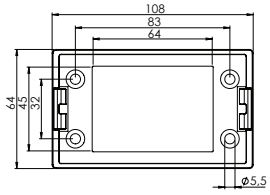
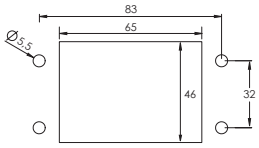
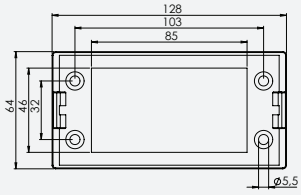
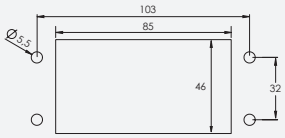
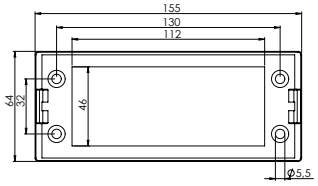
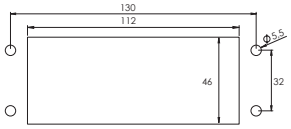
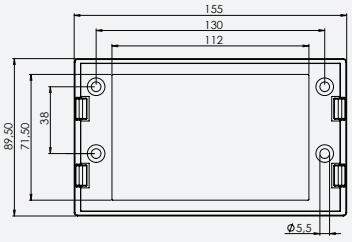
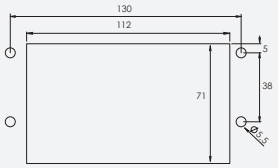
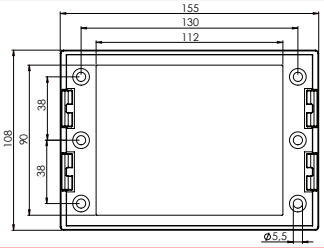
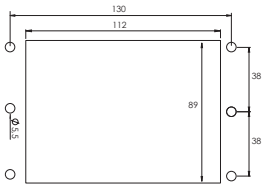
KEL-FA Cable entry frames	24 - 27
KEL Cable entry frames	28 - 37
KEL-U Cable entry frames	20 - 22
KEL-FG Flange enclosure	48 - 49
KEL-QUICK Cable entry frames	106 - 109
MP Module plates	326 - 327
BPK-SNAP Blank plates	344

Integrated circular sealing (IP54)

Blank plate BPK-SNAP, see page 344



KEL-SNAP
Mounting Frames

Description	Cut-out | Drilling template	Type	Cut-out [mm]	Suitable for	Order No.	PU
		KEL-SNAP-B	46 × 38 1.811 x 1.496 "	KEL-B KEL-U-B KEL-QUICK-B	42038	10
		KEL-SNAP 10	46 × 65 1.811 x 2.56 "	KEL 10 KEL-U 10 KEL-QUICK 10	42039	10
		KEL-SNAP 16	46 × 85 1.811 x 3.346 "	KEL 16 KEL-U 16 KEL-QUICK 16	42040	10
		KEL-SNAP 24	46 × 112 1.811 x 4.409 "	KEL 24 KEL-U 24 KEL-FG-A KEL-QUICK 24	42042	10
		KEL-SNAP 24-E	71 × 112 2.795 x 4.409 "	KEL 24-E	42044	1
		KEL-SNAP 24-MT	89 × 112 3.504 x 4.409 "	KEL 24-MT	42046	1

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KEL-JUMBO
Cable Entry Frames for Supply Cables
KTF, KTF-SCDP
Grommets for KEL-JUMBO

IP54

KTF

KTF-SCDP

The KEL-JUMBO cable entry system for installation of cables and conduits with a diameter of up to 65 mm, especially suited for supply cables.

The innovative grommet design with the flex-membrane provides flexing and adjustment of the position for larger and more rigid cables.

We recommend round cut-outs, which can be made using standard punching tools. Suggested cut-out: cable diameter +15–20%. All frame systems come with a rubber gasket.

The KTF grommets are suitable for cable diameters up to 65 mm.

The adaptable KTF-SCDP cable grommet enables the routing and sealing of supply cables and conduits with diameters up to 55 mm.

Cables with a comparatively smaller diameter can be utilized with KEL-JUMBO frames by using an adapter grommet.

Advantages & Benefits

- Installation of cables up to 65 mm
- KTF grommets allow flexing and adjustment of the cable position
- Retrofitting and maintenance can be carried out easily and quickly

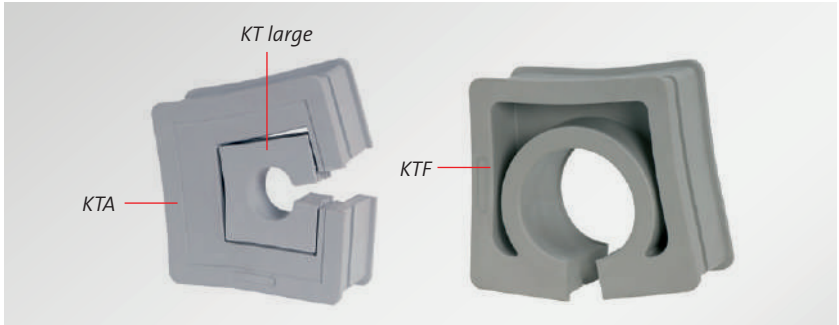
Specifications

Material	KEL-JUMBO: Polyamide (PA) KTF, KTF-SCDP: Elastomer
Flame class	UL94-V0, self-extinguishing
IP rating	IP54
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	KEL-JUMBO: - 40°C to + 140°C (static)/- 40°F to + 284°F (static) KTF, KTF-SCDP: - 40°C to + 100°C (static)/- 40°F to + 284°F (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	Round (recommended)
Frame depth	35 mm

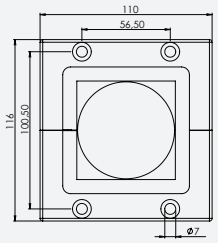
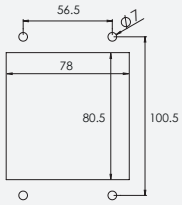
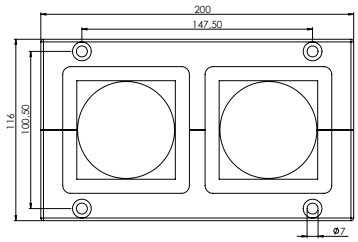
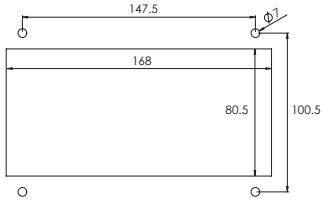
Accessories

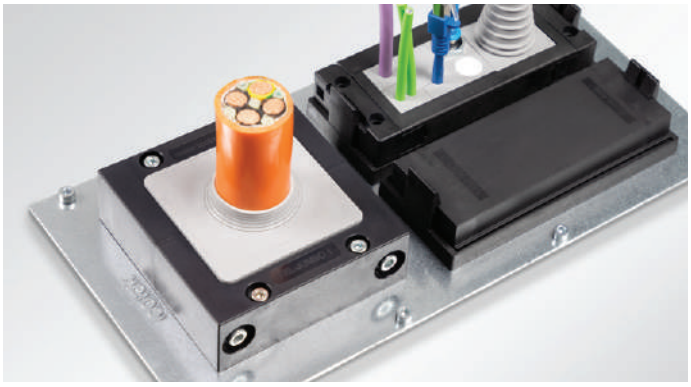
KDR-ESR Gland plates	316 - 323
KDR2 Split Gland plates	324 - 325
MP Module plates	326 - 327

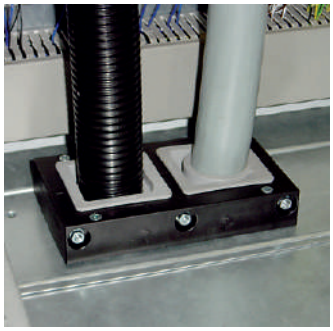
Type	Order No.	Clamping range	PU
KTF 00	42371	Blank grommet	1
KTA	42370	Adapter grommet for KT large	1
KTF 34	42376	33 - 36 mm 1.299 - 1.417 "	1
KTF 38	42379	37 - 40 mm 1.457 - 1.575 "	1
KTF 42	42382	41 - 44 mm 1.614 - 1.732 "	1
KTF 46	42385	45 - 48 mm 1.772 - 1.89 "	1
KTF 50	42388	48 - 52 mm 1.89 - 2.047 "	1
KTF 54	42391	53 - 56 mm 2.087 - 2.205 "	1
KTF 58	42394	56 - 60 mm 2.205 - 2.362 "	1
KTF 62	42397	61 - 65 mm 2.402 - 2.559 "	1
KTF-SCDP-A	42398	8 – 55 mm	1



KEL-JUMBO
Cable Entry Frames for Supply Cables

Description	Cut-out | Drilling template	Type	Order No.	Dimensions length | width | height	PU
		KEL-JUMBO 1	42360	110 × 116 × 35 mm 4.331 x 4.567 x 1.378 "	1
		KEL-JUMBO 1 with V2A screws	42360.200	110 × 116 × 35 mm 4.331 x 4.567 x 1.378 "	1
		KEL-JUMBO 2	42350	200 × 116 × 35 mm 7.874 x 4.567 x 1.378 "	1
		KEL-JUMBO 2 with V2A screws	42350.200	200 × 116 × 35 mm 7.874 x 4.567 x 1.378 "	1





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1.12 Split Cable Glands
for the KT Grommet System

By using icotek's split cable glands, cables with or without connectors or complete cable harnesses with diameters from 1 to 35 mm can be quickly routed into enclosures, cabinets or machines and achieve protection levels up to IP66/IP68/UL type 4X rated.

The split system of the KVT cable glands enables quick and easy assembly which is great for retrofitting and maintenance. The cable is placed into the split grommet which is set into one of the gland halves.

Depending on the size of the cable gland one, two, four or six separate grommets can be installed. The two gland halves can be easily snapped together without the need of tools. The routed lines are securely sealed and held inside the grommets.

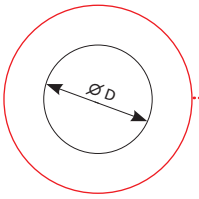
To mount the cable gland, either snap it into the standard round metric cut-out (sizes available from M20 to M80) or screw it on with a hexagon locknut. The assembly method depends on the model used.

Screwable or pluggable.

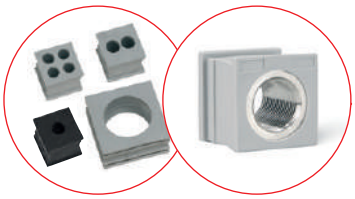
By screwing the top section of the split cable gland to its body, a higher clamping pressure can be achieved (stainless steel screws by default) .

Split system

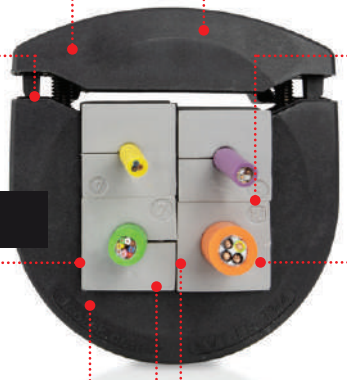
Fast and easy assembly



For metric cut-outs M20 – M80



High cable density, wide variety in cable grommets



KVT-ER

Very good strain relief acc. to EN 62444 – no additional cable ties required!

Integrated seal

Warranty on pre-terminated cables remains

Special locknuts for e.g. D-Sub or PROFIBUS connectors as well as split locknuts available.

KVT-ER 63|4 equipped with pressure compensation element, see page 361

Split Cable Glands
for Screw-In Assembly,
M25 – M63,
for Cable Diameters up to 35 mm

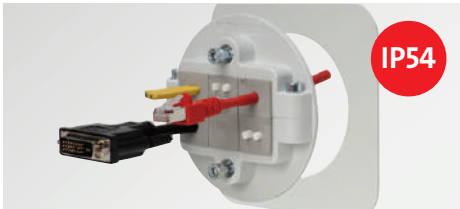
KVT-ER

60 – 63

Split Cable Glands | UL type 12
for Screw-In Assembly,
M20 – M63,
for Cable Diameters up to 35 mm

KVT

64 – 65



Split Cable Glands | UL type 12
for Screw-In Assembly,
M80,
for Cable Diameters up to 35 mm

KVT 80

66

Split Cable Glands | UL type 12
for Snap-In Assembly,
M32 – M63,
for Cable Diameters up to 35 mm

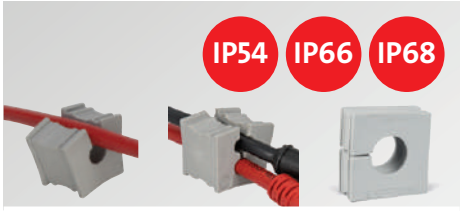
KVT-SNAP

67

Split Cable Glands | UL type 12
for 90° Cable Transit,
for Screw-In Assembly,
M32 – M50,
for Cable Diameters up to 35 mm

KVT-W90

68

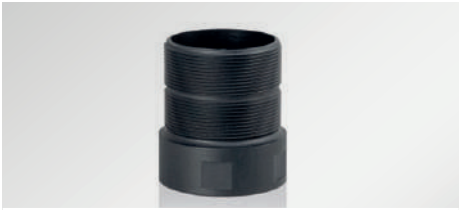


Cable Grommets
Split and Not Split,
for Cables with/without Connectors,
for Cable Diameters 1 – 35 mm

74 – 89

IMAS-CONNECT™
Modular Adapter System
for the KT system

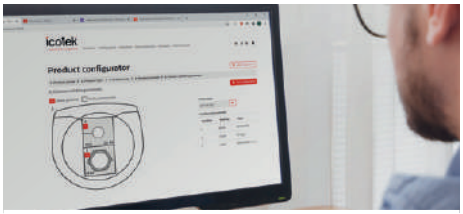
92 – 103



Thread extension
for Cable Glands and Cable Entry Plates
M25, M32, M50, M63

TE-M

346 – 351



Product configurator
www.icotek.com/en/config

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*4X for indoor use only

KVT-ER Series
Split Cable Glands with IP66/IP68 Rating

KVT-ER are split cable glands for routing and sealing cables with connectors, with diameters from 1 to 16 mm (KT 1 – 15) and 16 to 35 mm (KT 16 – 34). But also electric, pneumatic or hydraulic lines without terminals or connectors as well as corrugated conduits can be easily routed (e.g. into control panels, enclosures or machinery), sealed and strain relieved acc. to EN 62444.

The KVT-ER sizes are based on metric standard cut-outs M25, M32, M50 and M63. Hexagonal locknuts are included in the shipment. For assembly, we recommend to tighten the cover lid screws with max. 2 Nm.

Due to the injected gasket and if single-hole grommets are used, the KVT-ER provides certified protection ratings IP66/IP68 and UL type 12 and 4X*.

Advantages & Benefits

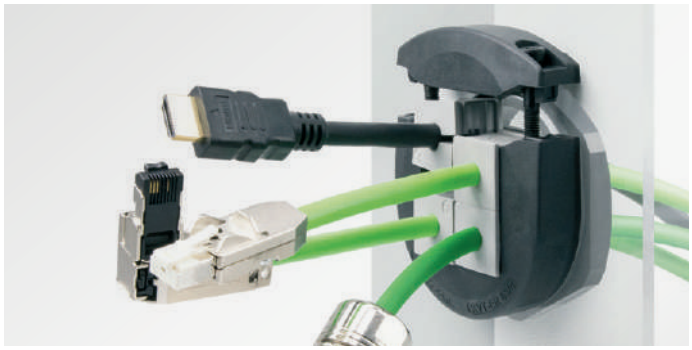
- Very high strain relief according to EN 62444
- Maintain manufacturer's warranty on pre-terminated cables
- Retrofittings, repairs and maintenance can be done easily and quickly
- Suitable for metric cut-outs
- High cable density, wide variety of grommets
- Hexagonal lock nut included in the delivery
- V2A stainless steel screws
- Very robust housing, vibration resistant
- Modern design

Specifications

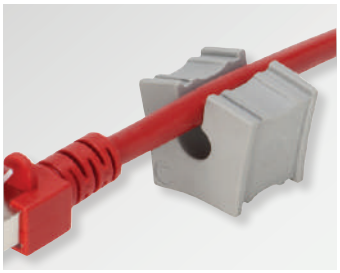
Material	Frame: Polypropylene (PP) Injected gasket: Elastomer
Flame class	UL94-V0, self-extinguishing
IP rating	IP65/IP66/IP67/IP68, if correctly assembled with single grommets (certified acc. to EN 60529)
Operating temperature	- 40°C to + 110°C (static) - 40° F to + 230° F (static)
Properties	Halogen-free, silicone-free
Cut-out dimension	Metric sizes

Accessories

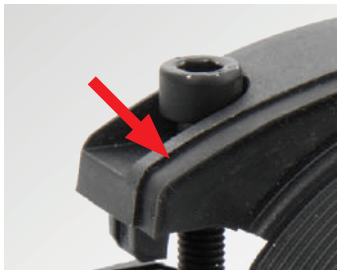
KT Cable grommets	74 - 89
AT Adapter grommets	92 - 103
KVT-EMC Brackets	277
Locknuts	358
ST Plugs	87
Round punches	394 - 397
TE-M	346 - 349



Certified protection class IP65/ IP66/IP67/IP68



Split KT grommets



Injected elastomer gasket

Can be combined with TE-M thread extension

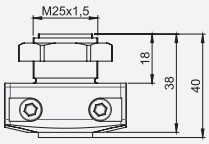
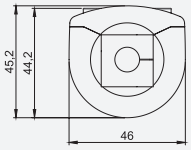
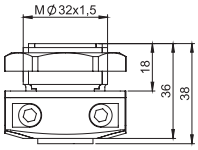
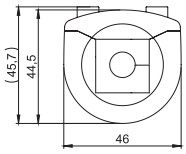
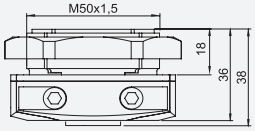
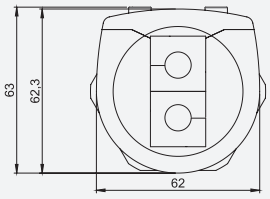
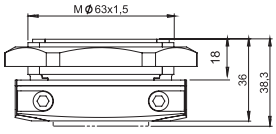
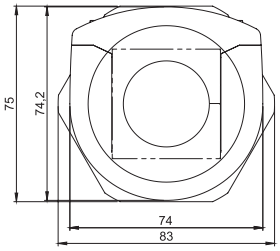
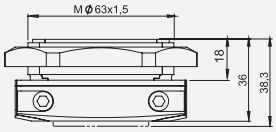
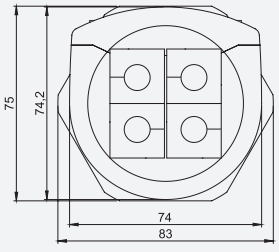
KGM-SUB-D9
fits D-Sub 9 connectors
(Required wall cut-out:
ø 36 mm/ 1.417", PU: 10)
■ Order No. 45106

KGM-SUB-D25
fits SUB-D25 connectors
(Required wall cut-out:
ø 50 - 54 mm/ 1.969 - 2.126",
PU:10)
■ Order No. 45110

Type GMT: Split locknut, p. 358

*4X for indoor use only

KVT-ER
Split Cable Glands

Description	Type	Order No.	Grommets KT small | large	Cut-out** diameter	Thread Thread length	PU
 	KVT-ER 25*	45450	1 | –	25.5 mm	M25 × 1.5 Length: 18 mm/0.709"	10
 	KVT-ER 32	45452	1 | –	32.5 mm	M32 × 1.5 Length: 18 mm/0.709"	10
 	KVT-ER 50|2	45454	2 | –	50.5 mm	M50 × 1.5 Length: 18 mm/0.709"	5
 	KVT-ER 63|1	45455	– | 1	63.5 mm	M63 x 1.5 Length: 18 mm/0.709"	5
 	KVT-ER 63|4	45456	4 | –	63.5 mm	M63 × 1.5 Length: 18 mm/0.709"	5

* Max. cable diameter of 15 mm
** Please consider any paint layers or powder coatings!

1
1.11
1.12
1.13
1.14
1.15
1.2
1.21
1.22
1.23
1.24
1.25
1.3

KVT Series
Split Cable Glands with IP54 Rating

KVT is a circular split frame for quick and easy installation and sealing of cables with connectors or complete cable harnesses.

Polyamide locknuts as well as a sealing ring are included in the shipment.

For routing D-Sub, DVI or PROFIBUS connectors in combination with the split cord grips KVT, special locknuts with cut-outs are required.

Advantages & Benefits

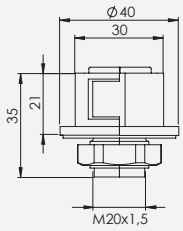
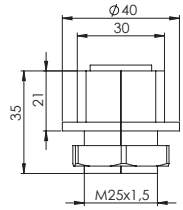
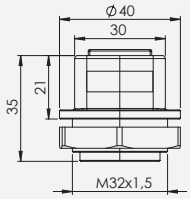
- Insertion of pre-terminated cables
- Maintain manufacturer's warranty on pre-terminated cables
- Retrofittings, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Suitable for metric cut-outs
- Locknut is included

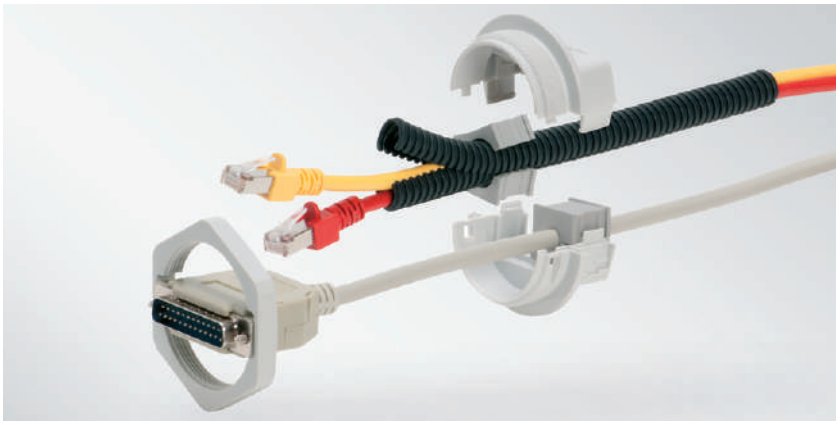
Specifications

Material	Polycarbonate (PC)
Color	gray (similar RAL 7035) black
Flame class	UL94-V0, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 30°C to + 100°C (static)
Properties	Halogen-free, silicone-free
Cut-out dimension	Metric sizes

Accessories

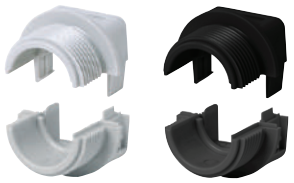
KT Cable grommets	74 - 89
AT Adapter grommets	92 - 103
KVT-EMC Brackets	277
Locknuts	358
ST Plugs	87
Round punches	394 - 397
TE-M	346 - 349

Description	Type	Order No	Grommets small | large	Thread Thread length	PU
	KVT 20**	45034 45024	1|-	M20 × 1.5 Length: 14 mm / 0.551 "	10
	KVT 25***	45035 45025	1|-	M25 × 1.5 Length: 14 mm / 0.551 "	10
	KVT 32	45036 45026	1|-	M32 × 1.5 Length: 14 mm / 0.551 "	10
	KVT 32 + KGM-SUB-D9	45037 45027	1|-	M32 × 1.5 Length: 14 mm / 0.551 "	10



* Only valid for gray product types | ** Max. cable diameter of 11 mm
*** Max. cable diameter of 15 mm/0.591 "

KVT
Split Cable Glands



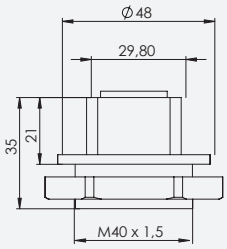
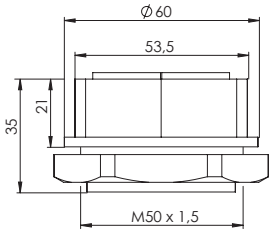
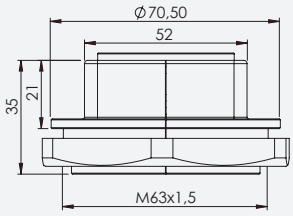
Locknuts

Locknuts with special cut-outs are available separately. The cut-out dimensions are listed on page 292.

KGM-SUB-D9 fits D-Sub 9 connectors
(Required wall cut-out: Ø 36 mm, PU: 10)
□ **Order No. 45105** ■ **Order No. 45106**

KGM-PB fits DVI and PROFIBUS connectors
(Required wall cut-out: Ø 42 mm, PU: 10)
□ **Order No. 45107** ■ **Order No. 45109**

KGM-SUB-D25 fits SUB-D25 connectors
(Required wall cut-out: Ø 50 - 54 mm, PU:10)
□ **Order No. 45108** ■ **Order No. 45110**

Description	Type	Order.No.	Grommets small | large	Thread Thread length	PU
	KVT 40	□ 45203 ■ 45028	1|-	M40 × 1.5 Length: 14 mm / 0.551 "	10
	KVT 40 + KGM-PB	□ 45205 ■ 45029	1|-	M40 × 1.5 Length: 14 mm / 0.551 "	10
	KVT 50|2 ♦	□ 45204 ■ 45030	2|-	M50 × 1.5 Length: 14 mm / 0.551 "	5
	KVT 50|2 ♦ + KGM-SUB-D25	□ 45206 ■ 45031	2|-	M50 × 1.5 Length: 14 mm / 0.551 "	5
	KVT 63|1	□ 45212 ■ 45112	-|1	M63 × 1.5 Length: 14 mm / 0.551 "	5
	KVT 63|4	□ 45215 ■ 45115	4|-	M63 × 1.5 Length: 14 mm / 0.551 "	5

Type GMT: Split locknut, p. 358

The cable glands enable the integration of the IMAS-CONNECT™ adapter grommets

* Only valid for gray product types | ♦ cannot be combined with adapter grommet AT-K-M

KVT 80
Split Cable Glands for Front Mounting

The KVT 80 split cable glands are designed for routing and sealing cables with connectors. By assembling the two frame halves with the screws provided, the grommets provide sufficient pressure on the routed cables to obtain a high degree of strain relief. The KVT 80 can be fitted to a wall thickness from 1.5 mm to 10 mm. A flat rubber gasket is included in the shipment.

Advantages & benefits

- Insertion of pre-terminated cables
- Maintain manufacturer's warranty on pre-terminated cables
- Retrofittings, repairs and maintenance can be done quickly
- High cable density, wide variety of grommets
- Fast and easy assembly from the front
- Strain relief according to EN 62444

Notes

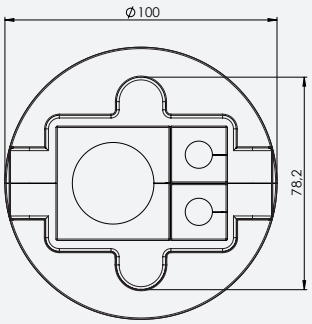
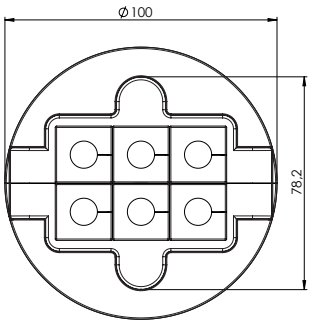
When mounting the KVT 80 on sheet metal, we recommend the following torque values:
1.5 mm sheet = 1 N m | 2 - 10 mm sheet = 1.5 N m

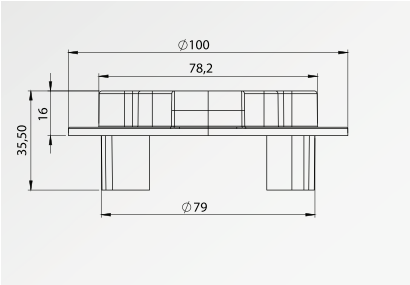
Specifications

Material	Polycarbonate (PC)
Color	gray (similar RAL 7035) black
Flameclass	UL94-V0
IP rating	IP54, with gasket and correct selection of the cable grommets (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Operating temperature	- 30°C to + 100°C (static) - 22°F to + 212°F (static)
Properties	Halogen-free, silicone-free
Cut-out dimension	80 mm in diameter

Accessories

Cable grommets	74 - 89
ST Plugs	87
Round punches	394 - 397

Description	Type	Order No.	Grommets KT small | large	PU
	KVT 80|3	45236 45239	2|1	1
	KVT 80|6	45237 45238	6|-	1



*Only valid for gray product types

KVT-SNAP
Split Pluggable Cable Glands

KVT is a circular split frame for quick and easy installation of cables with connectors or complete cable harnesses.

By using the model KVT-SNAP, cables can be routed through thick walls (> 5 mm) e.g. into cast junction boxes without the use of tools. A sealing ring is included in the shipment.

Assembly

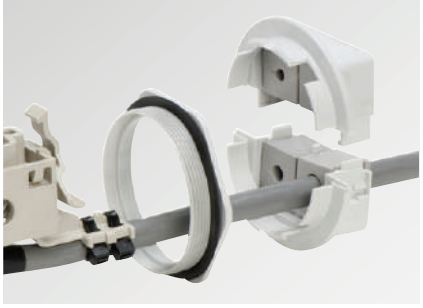
- The snap ring is screwed into metric thread or tapped into the cut-out (it can also be fastened with a locknut, which is included in the shipment of KVT-SNAP 63)
- Once the snap ring is affixed to the housing the equipped KVT is simply pushed into it. Fast and easy installation!

Specifications

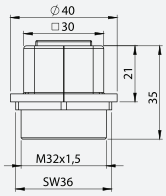
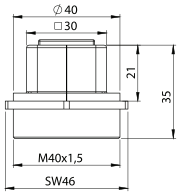
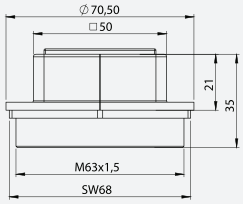
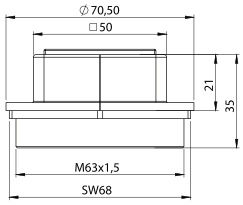
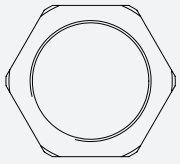
Material	Polycarbonate (PC)
Color	gray (similar RAL 7035)
Flame class	UL94-V0
IP Rating	☐ IP54, with gasket and correct selection of the cable grommets (certified acc. to EN 60529)
Operating temperature	- 30°C to + 100°C (static) - 22°F to + 212°F (static)
Properties	Halogen-free, silicone-free
Cut-out dimension	Metric cut-outs

Accessories

Cable grommets	74 - 89
KVT-EMC Brackets	277
KGM Locknuts	358
ST Plugs	87
Round punches	394 - 397
TE-M	346 - 349



*Only valid for gray product types

Description	Type	Order No.	Grommets small | large	Thread Thread length	PU
	**KVT-SNAP 32**	**45130**	**1|-**	**M32 × 1.5** **Length: 11 mm / 0.443 "**	**10**
	**KVT-SNAP 40**	**45134**	**1|-**	**M40 × 1.5** **Length: 11 mm / 0.443 "**	**10**
	**KVT-SNAP 63|4 + KGM 63**	**45152**	**4|-**	**M63 × 1.5** **Length: 11 mm / 0.443 "**	**5**
	**KVT-SNAP 63|1 + KGM 63**	**45154**	**-|1**	**M63 × 1.5** **Length: 11 mm / 0.443 "**	**5**
	**KGM 32**	**52275** **52285**	**PA**	**M32 × 1.5**	**10**
	KGM 40	**52276** **52286**	**PA**	**M40 × 1.5**	**10**
	KGM 63	**52278** **52288**	**PA**	**M63 × 1.5**	**5**

KVT-W90
for 90° Cable Transit, Split Cable Glands

The split KVT-W90 cable glands are used to insert and seal pre-terminated cables and conduits at a 900 angle.

In particular, the KVT 50-W90 is perfectly suited to hold corrugated or smooth hoses. A large number of cable entry grommets is available to the user.

Polyamide locknuts as well as a sealing ring are included in the shipment. Split locknuts can be ordered separately.

Advantages & Benefits

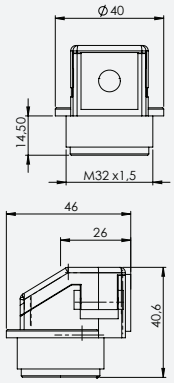
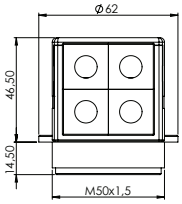
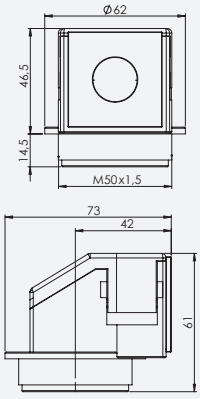
- Installation at an angle of 900 to the enclosure
- Insertion of pre-terminated cables and conduits
- Maintain manufacturer's warranty on pre-terminated cables
- Suitable for metric cut-outs

Specifications

Material	Polycarbonate (PC)
Color	gray (similar RAL 7035) black
Flame class	UL94-V0
IP Rating	IP54, with gasket and correct selection of the cable grommets (certified acc. to EN 60529)
Operating temperature	- 30°C to + 100°C (static) - 22°F to + 212°F (static)
Properties	Halogen-free, silicone-free
Cut-out dimension	Metric cut-outs

Accessories

Cable grommets	74 - 89
KVT-EMC Brackets	277
KGM Locknuts	358
ST Plugs	87
Round punches	394 - 397
TE-M	346 - 349

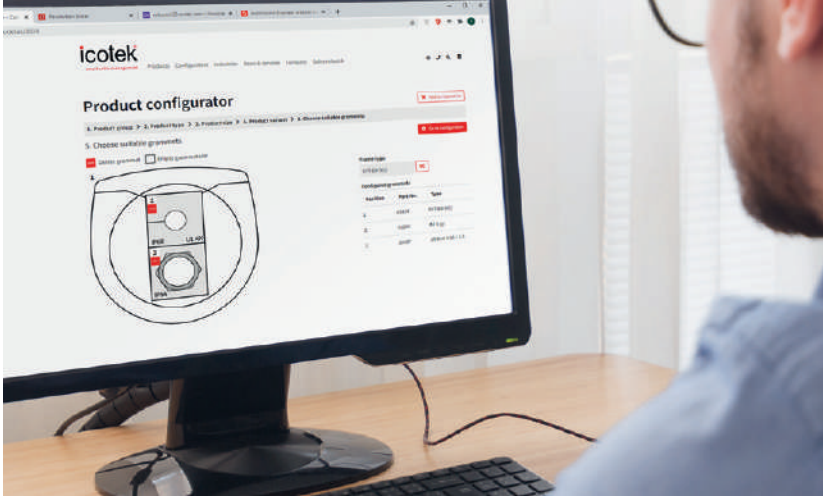
Description	Type	Order No. with locknut	Grommets small | large	Thread Thread length	PU
	KVT 32-W90	45404 45406	1|-	M32 × 1.5 Length: 11.5 mm / 0.453 "	10
	KVT 50|4-W90	45424 45426	4|-	M50 × 1.5 Length: 11.5 mm / 0.453 "	5
	KVT 50|1-W90	45414 45416	-|1	M50 × 1.5 Length: 11.5 mm / 0.453 "	5

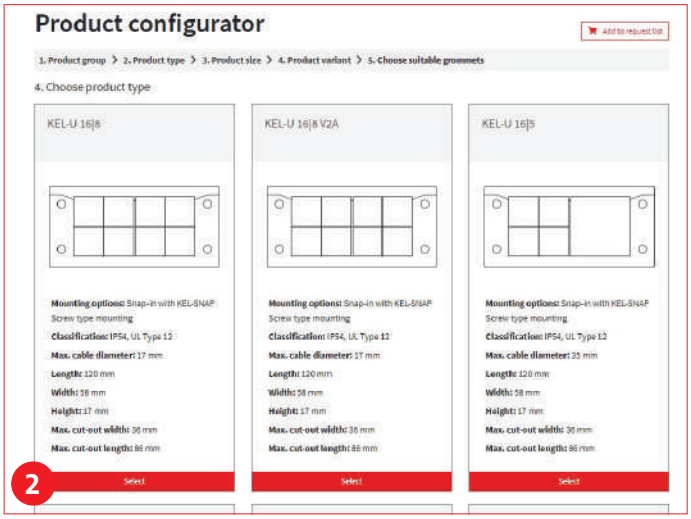
*Only valid for gray product types

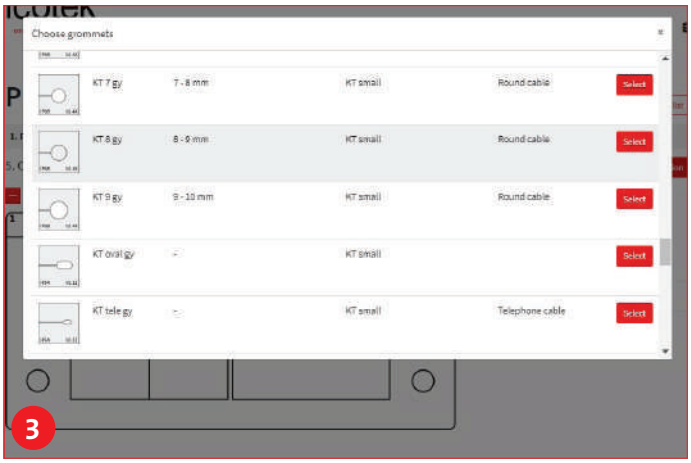
The Practical Product Configurator

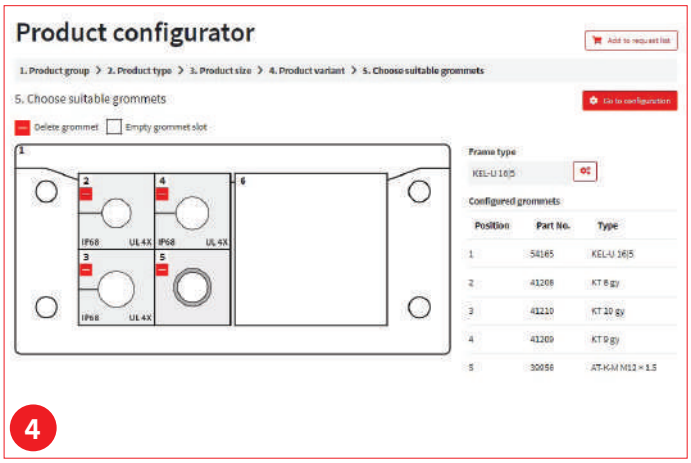
With the product configurator, you can now assemble your cable entry system with the required cable or adapter grommets.

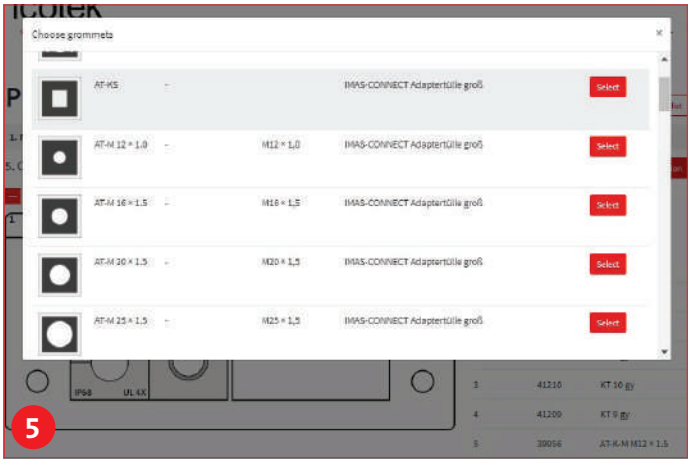
Check it out: www.icotek.com/en-us/config

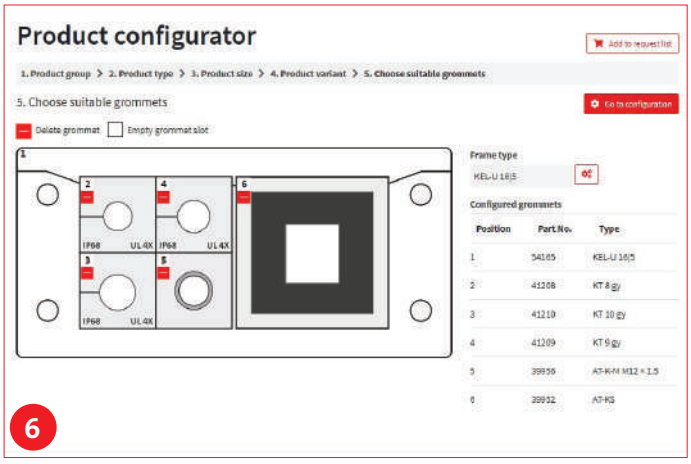












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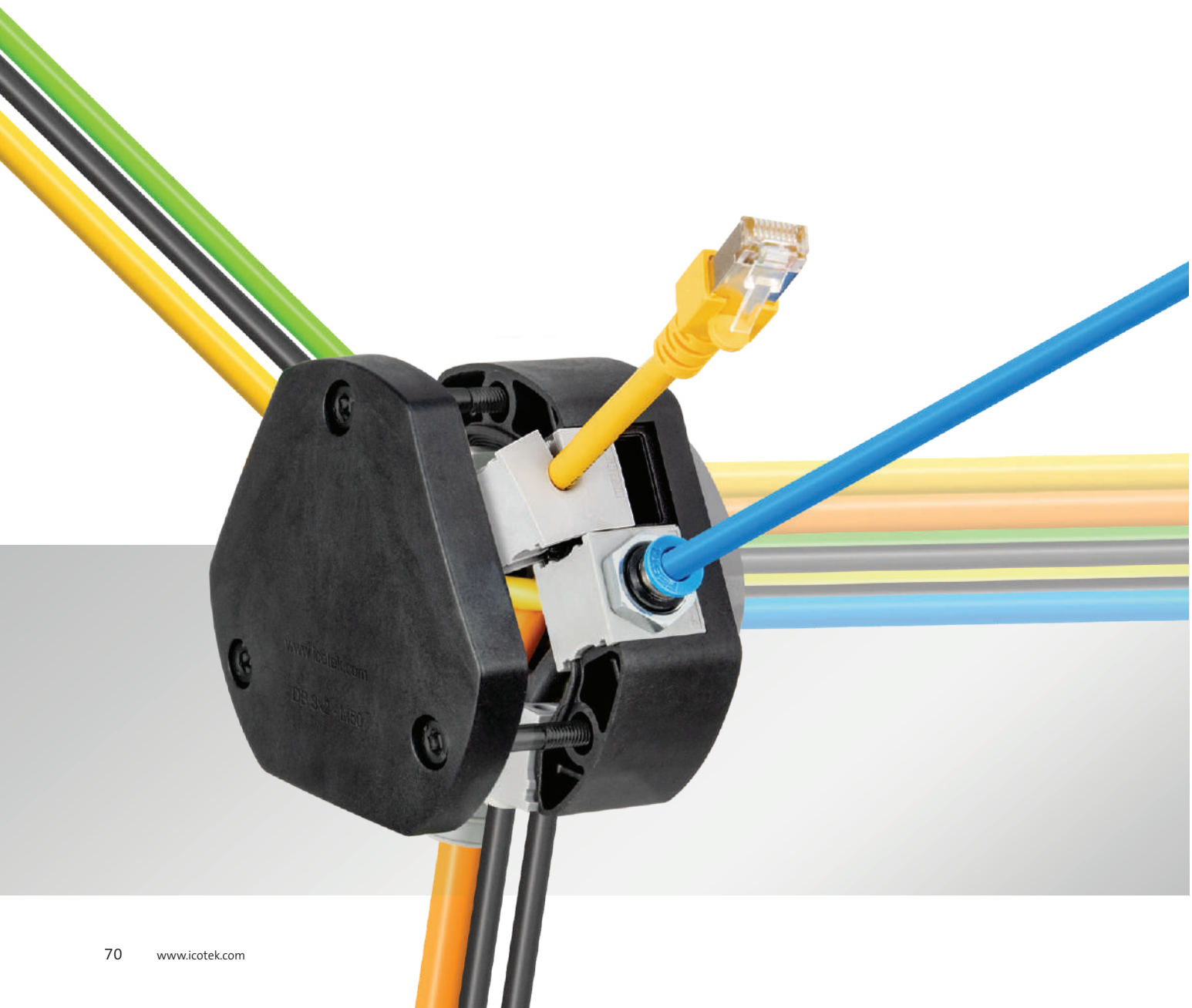
1.13 Distribution Box
for 360° Cable Entry

The 360° cable entry
for cables with and without connectors

IP54 | c UL us in progress | ECOLAB certified | RoHS compliant | Made in Germany | +230°F -40°F | 1–15 mm

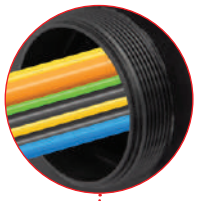
With the distribution box, centrally routed cables can be distributed 360° in any direction.

Cables with and without connectors can be routed, sealed with IP54 (certified according to DIN EN 60529) and at the same time strain-relieved according to DIN EN 62444.



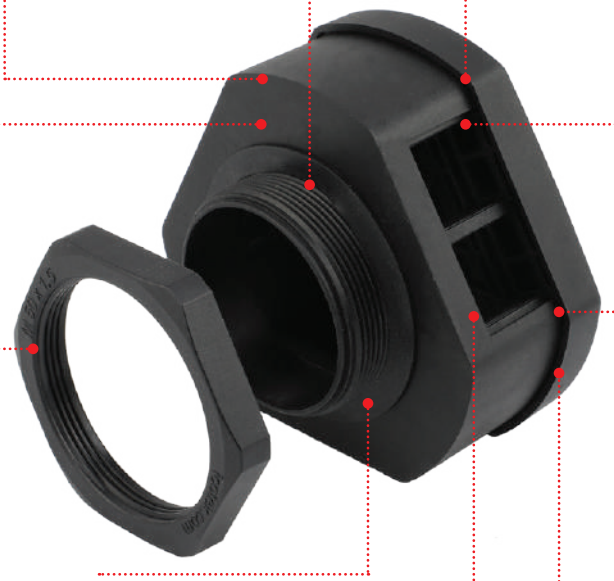
Easy distribution of cables in a 360° angle

Innovative design



Metric thread, suitable for metric cut-outs M32 – M75

Material Polyamide, Polypropylene



High cable density, wide variety of grommets

Hexagonal locknut included in the delivery

Strain relief according to EN 62444

Separate flat gasket included in the delivery

EN 62444

Use of the proven KT grommet system as well as IMAS-CONNECT™ adapter grommets

Screw-on cover, captive screws

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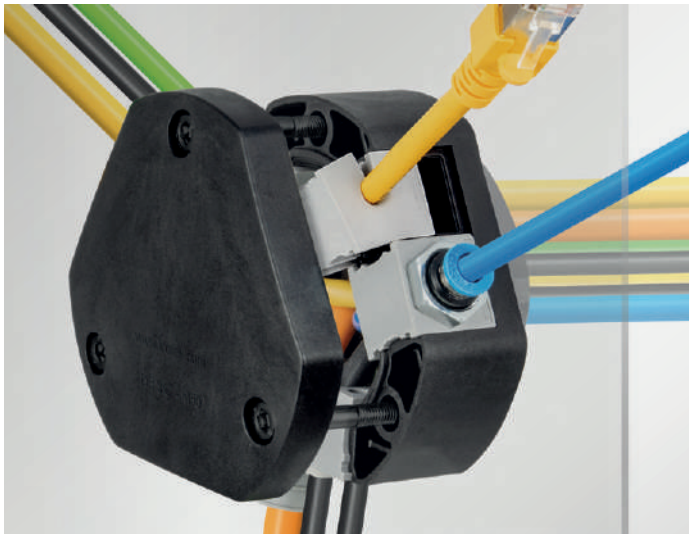
DB Distribution Box
360° Cable Entry with IP54 Rating

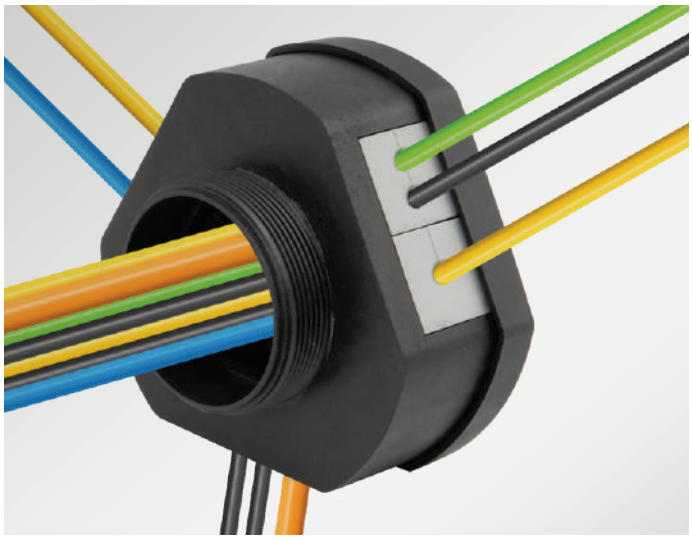
With the new distribution box, centrally routed cables can be distributed 360° in any direction.

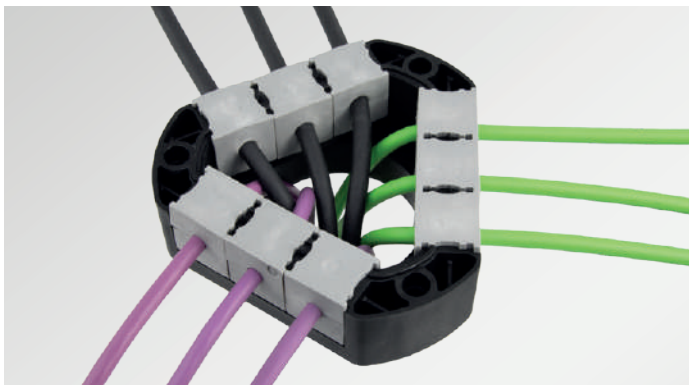
Cables with and without connectors can be routed, sealed with IP54 (certified according to DIN EN 60529) and at the same time strain-relieved according to DIN EN 62444. Up to 48 cables can be routed and a very high cable density achieved by using multiple grommets.

The basic triangular shape provides maximum space for cable entry. This allows the use of cables with different bending radii.

The distribution box fits standard metric cut-outs M32 – M75 and is secured with a locknut which is included in the delivery. The screw-on cover and the use of split cable grommets make it easy to retrofit or service at a later date.







Advantages

- Fast and easy assembly
- Easy distribution of cables in a 360° angle
- Warranty on pre-terminated cables remains
- Retrofittings, repairs and maintenance can be done much more easily and quickly
- Suitable for metric cut-outs M32 – M75
- Strain relief according to EN 62444
- Use of the proven KT grommet system
- High cable density, wide variety of grommets
- High flexibility with the use of multi-range and IMAS-CONNECT™ adapter grommets
- Hexagonal locknut included in the delivery
- High stability, vibration resistant
- Mechanical protection of the central entry point
- Captive screws

Specifications

Material	Polyamide (PA), Polypropylene (PP)
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54 (certified acc. to EN 60529)
Temperature	-40°C to +110°C (static)
Properties	Halogen-free, silicone-free
Frame depth	39,4 mm

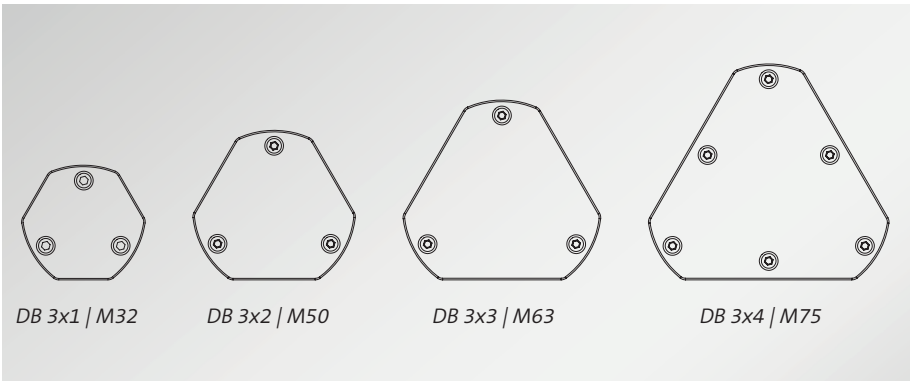
Accessories

KT cable grommets	74 - 89
IMAS-CONNECT adapter grommets	94 - 101
TE-M	346 - 349

DB Distribution Box
360° Cable Entry

IP54 | cULus in progress | ECOLAB certified | RoHS compliant | Made in Germany

Type	Grommets small	For max. no. of cables	Cut-out	Thread length	Dimensions L x B	Mounting height	Order No.	PU
DB 3x1 | M32	3	12	M32	13,6 mm	72 x 67 mm	39,4 mm	54300	5
DB 3x2 | M50	6	24	M50	13,6 mm	94,5 x 87 mm	39,4 mm	54301	5
DB 3x3 | M63	9	36	M63	13,6 mm	115 x 104 mm	39,4 mm	54302	1
DB 3x4 | M75	12	48	M75	13,6 mm	140 x 125 mm	39,4 mm	54303	1



DB 3x1 | M32 *DB 3x2 | M50* *DB 3x3 | M63* *DB 3x4 | M75*

1.14 Cable Grommets
for the KT System

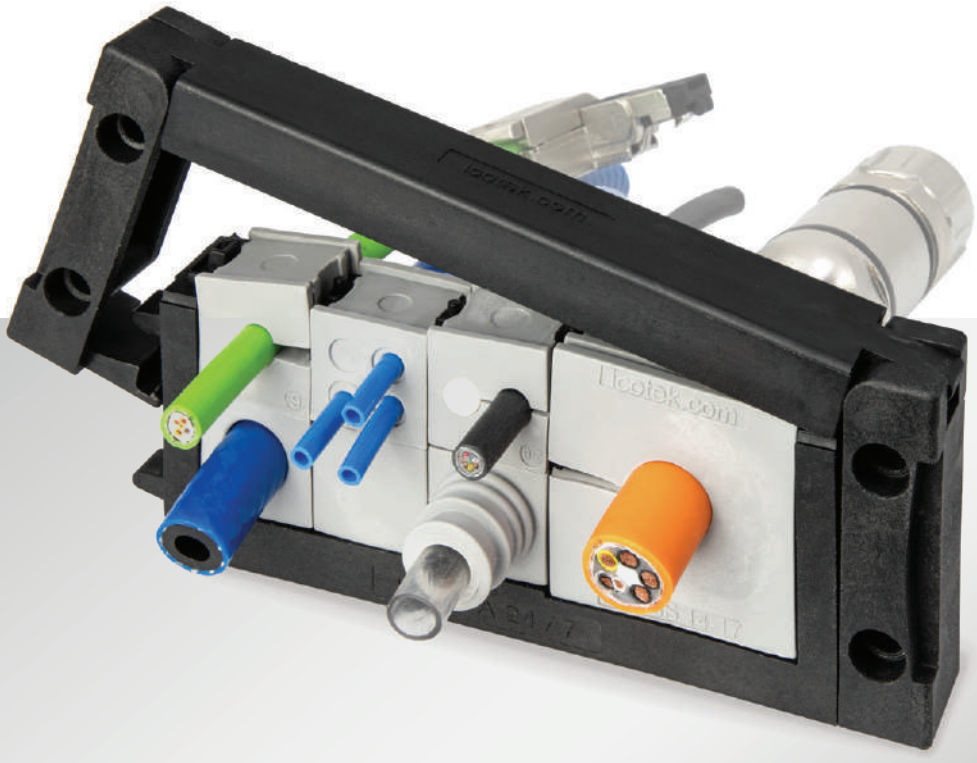
Cable grommets KT are used with the following cable entry components:

- **KEL cable entry frames**
- **KVT split cable glands**
- **DB Distribution Box**

In combination with KEL-ER cable entry frames and KVT-ER cable glands the KT single-hole grommets enable a sealing of the cables with up to IP66/IP68 and UL Type 4X.

In principle, there are two types of cable grommets: split and non-split grommets. The split grommets are suitable for routing cables with connectors, the non-split ones are used for routing non-terminated cables.

Electrical, pneumatic or hydraulic lines as well as corrugated conduits and hoses can be easily routed, sealed and strain relieved using split cable entry systems.



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*4X for indoor use only

Overview of Cable Entry Systems and Matching Grommets

	Split cable grommets for cables with connectors				Non-split cable grommets for cables without connectors			
Product	KT small single-hole	KT large single-hole	KT small multi, special	KTMBS multi-range	KT-DPF multi-range	KT-SC multi-range	KTMB multi-range	KT-DT
KEL-ER	●	●	○	○	○	○	○	○
KEL-U	●	●	●	●	●	●	●	●
KEL-FA	●	●	●	●	●	●	●	●
KEL	●	●	●	●	●	●	●	●
KEL-FG-ER	●	●	○	○	○	○	○	○
KEL-FG	●	●	●	●	●	●	●	●
KEL-FW	●	●	○	○	○	○	○	○
MIS	●	–	○	–	○	○	○	○
KVT-ER	●	●	○	○	○	○	○	○
KVT	●	●	●	●	●	●	●	●
KVT 80	●	●	●	●	●	●	●	●
KVT-SNAP	●	●	●	●	●	●	●	●
KVT W90	●	●	●	●	●	●	●	●
DB	●	–	●	●	●	●	●	●

○ *Not recommended, as the degree of protection would be reduced to IP54*

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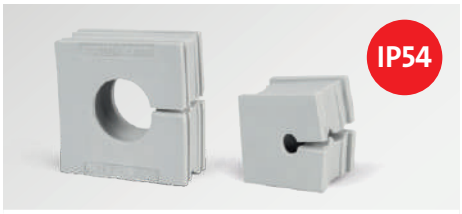
1.14 Cable Grommets
for the KT System

Split Cable Grommets for Cables with Connectors

Split Cable Grommets, Single
Protection up to IP66/IP68 and UL Type 4X
for Cable Diameters 1 to 35 mm

KT

78 – 79



Split Multi-Range Cable Grommets
IP54 Protection and UL Type 12
for Cable Diameters 4 to 29 mm

KTMBS

80 – 81

Split Cable Grommets, Multi and Special
IP54 Protection and UL Type 12
for Cable Diameters 1 to 8 mm

KT multi

82

Non-Split Cable Grommets for Cables without Connectors

Multi-Range Cable Grommets
IP54 Protection
for Cable Diameters 3 to 26 mm

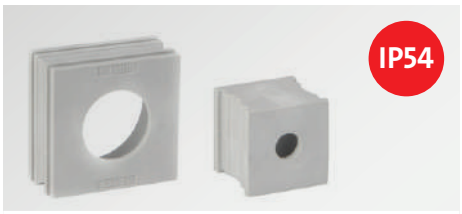
KT-DPF

83

Multi-Range Cable Grommets
IP54 Protection
for Cable Diameters 4 to 28 mm

KT-SC

84



Multi-Range Cable Grommets
IP54 Protection
for Cable Diameters 2.5 to 33 mm

KTMB

85

Membrane Cable Grommets
IP54 Protection, high Cable Density
for Cable Diameters up to 14.5 mm

KT-DT

84486

Plugs for Cable Grommets

Plugs and Cover Plugs
Plugs for Cable Grommets,
Cover Plugs for Cable Entry Frames

87 – 88

Plugs for Membranes

ST-B

177

IMAS-CONNECT™

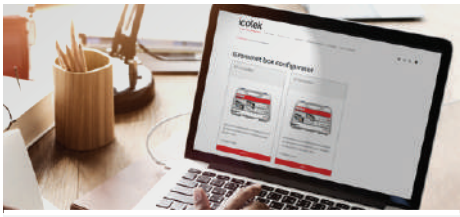
IMAS-CONNECT™
Modular Adapter System
for the KT System

92 – 93

KT ServiceBox

KT ServiceBox
Service Box for Cable Grommets

89



KT ServiceBox
Service Box for Cable Grommets

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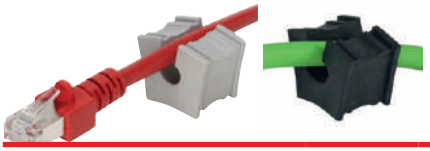
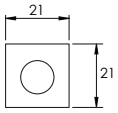
KT
Split Cable Grommets, Small, Single





Split cable grommets KT are used with the following cable entry components:

- KEL cable entry frames
- KVT split cable glands
- DB Distribution Box

They are designed for cable diameters from 1 to 17 mm. Blank grommets can seal unused grommet spaces.

When installing the small grommets in multiple rows, the flat sides should be facing each other. This allows the flat sides to match up and provide a secure seal.

Advantages

- Routing of cables with and without connectors
- High degree of protection up to IP68
- High strain relief in accordance with EN 62444 when a suitable cable entry is selected
- Available for a wide range of cable diameters

Specifications KT gray

Material	Elastomer
Flame class	UL 94 V-0, self-extinguishing
IP rating	up to IP66/IP68
UL type rating	up to UL type 4X (acc. to UL 50E)
Temperature	- 40°C to + 100°C (static)
Properties	Halogen-free, silicone-free

Specifications KT black

Material	Elastomer
Flame class	UL 94 HB
IP rating	up to IP66/IP68
Temperature	- 30°C to + 90°C (static)
Properties	Silicone-free Higher chemical resistance e.g. with aggressive oils, coolants

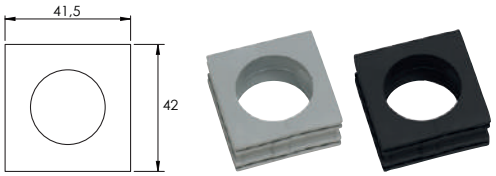
Accessories

ST Plugs	87

Description	Type	Clamping range	IP rating	Compatible ST plugs	Order No gray	Order No black	PU
	KT 1	1 – 2 mm	IP68	ST 1	39941	39943	10
	KT 2	2 – 3 mm	IP68	ST 2	39934	41302	10
	KT 3	3 – 4 mm	IP68	ST 3	41203	41303	10
	KT 4	4 – 5 mm	IP68	ST 4	41204	41304	10
	KT 5	5 – 6 mm	IP68	ST 5	41205	41305	10
	KT 6	6 – 7 mm	IP68	ST 6	41206	41306	10
	KT 7	7 – 8 mm	IP68	ST 7	41207	41307	10
	KT 8	8 – 9 mm	IP68	ST 8	41208	41308	10
	KT 9	9 – 10 mm	IP68	ST 9	41209	41309	10
	KT 10	10 – 11 mm	IP68	ST 10	41210	41310	10
	KT 11	11 – 12 mm	IP68	ST 11	41211	41311	10
	KT 12	12 – 13 mm	IP68	ST 12	41212	41312	10
	KT 13	13 – 14 mm	IP68	ST 13	41213	41313	10
	KT 14	14 – 15 mm	IP68	ST 14	41214	41314	10
	KT 15	15 – 16 mm	IP68	ST 15	41215	41315	10
	KTs 16	16 mm	IP54	ST 16	39901	39912	10
	KTs 17	17 mm	IP54	ST 17	39900	39913	10
	BTK	Blank grommet	IP68	–	41251	41351	10

*Only valid for gray product types | **4X for indoor use only

KT
Split Cable Grommets, Large, Single



Split cable grommets KT are used with the following cable entry components:

- KEL cable entry frames
- KVT split cable glands

They are designed for cable diameters from 13 to 35 mm.

The adapter grommet ATG offers the possibility to accommodate a small cable grommet KT and thus reduce the clamping range down to 1 mm.

Advantages

- Routing of cables with and without connectors
- High degree of protection up to IP68
- High strain relief in accordance with EN 62444 when a suitable cable entry is selected
- Available for a wide range of cable diameters

Specifications KT gray

Material	Elastomer
Flame class	UL 94 V-0, self-extinguishing
IP rating	KT round, single: up to IP66/IP68 ATG/BTG: IP54
UL type rating	up to UL type 4X (acc. to UL 50E)
Temperature	-40°C to +100°C (static)
Properties	Halogen-free, silicone-free

Specifications KT black

Material	Elastomer
Flame class	UL94-HB
IP rating	KT round, single: up to IP66/IP68 ATG/BTG: IP54
Temperature	-30°C to +90°C (static)
Properties	Silicone-free Higher chemical resistance e.g. with aggressive oils, coolants

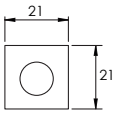
Accessories

ST Plugs	87

Description	Type	Clamping range	IP rating	Compatible ST plugs	Order No gray	Order No black	PU
	KTG 13	13 – 14 mm	IP68	ST 13	41263	41363	10
	KTG 14	14 – 15 mm	IP68	ST 14	41264	41364	10
	KTG 15	15 – 16 mm	IP68	ST 15	41265	41365	10
	KT 16	16 – 17 mm	IP68	ST 16	41216	41316	10
	KT 17	17 – 18 mm	IP68	ST 17	41217	41317	10
	KT 18	18 – 19 mm	IP68	ST 18	41218	41318	10
	KT 19	19 – 20 mm	IP68	ST 19	41219	41319	10
	KT 20	20 – 21 mm	IP68	ST 20	41220	41320	10
	KT 21	21 – 22 mm	IP68	ST 21	41221	41321	10
	KT 22	22 – 23 mm	IP68	ST 22	41222	41322	10
	KT 23	23 – 24 mm	IP68	ST 23	41223	41323	10
	KT 24	24 – 25 mm	IP68	ST 24	41224	41324	10
	KT 25	25 – 26 mm	IP68	ST 25	41225	41325	10
	KT 26	26 – 27 mm	IP68	ST 26	41226	41326	10
	KT 27	27 – 28 mm	IP68	ST 27	41227	41327	10
	KT 28	28 – 29 mm	IP68	ST 28	41228	41328	10
	KT 29	29 – 30 mm	IP68	ST 29	41229	41329	10
	KT 30	30 – 31 mm	IP68	ST 30	41230	41330	10
	KT 31	31 – 32 mm	IP68	ST 31	41231	41331	10
	KT 32	32 – 33 mm	IP68	ST 32	41232	41332	10
	KT 33	33 – 34 mm	IP68	ST 33	41233	41333	10
	KT 34	34 – 35 mm	IP68	ST 34	41234	41334	10
	BTG	Blank grommet	IP68	–	41252	41352	10
	ATG	Adapter grommet	IP54	BTK	41253	41353	10

*Only valid for gray product types | **4X for indoor use only

KTMBS
Split Multi-Range Grommets, Small



Description	Type	Clamping range	Compatible ST-B plugs	Order No gray	Order No black	PU
	KTMBS 4-7	4 – 7 mm	ST-B 6	41380	51380	10
	KTMBS 6-9	6 – 9 mm	ST-B 8	41381	51381	10
	KTMBS 8-11	8 – 11 mm	ST-B 10	41382	51382	10
	KTMBS 10-12	10 – 12 mm	ST-B 11	41383	51383	10

Cable grommets KTMBS are used to route cables with and without connectors with the following cable entry components:
- KEL cable entry frames (KEL-U, KEL, KEL-FA, KEL-FG)
- KVT cable glands
- DB Distribution Box

The innovative membrane enables the routing of cables with diameters that can vary up to 3 mm.

The KTMBS small allows for the routing of cable diameters from 4 to 12 mm.

The innovative wave cut and the flexible sealing lips make it possible to seal the cable with IP54/UL Type 12.

Advantages
- Routing of cables with and without connectors
- IP rating IP54
- Strain relief when a suitable cable entry is selected
- Large clamping range
- Only 4 grommets cover a clamping range from 4 to 12 mm
- Innovative wave cut for a better sealing
- Innovative membrane for high flexibility

Specifications KT gray

Material	Elastomer
Flame class	UL 94-V0, self-extinguishing
IP rating	IP54
Temperature	-40°C to +100°C (static)
Properties	Silicone free, halogen free

Specifications KT black

Material	Elastomer
Flame class	UL 94 HB
IP rating	IP54
Temperature	- 30°C to + 90°C (static)
Properties	Silicone-free Higher chemical resistance e.g. with aggressive oils, coolants

Accessories

ST-B Plugs	177

ST-B plug for the sealing of the perforated membrane

Detail of the wave cut

Also available in black

KTMBS
Split Multi-Range Grommets, Large

Cable grommets KTMBS are used to route cables with and without connectors with the following cable entry components:
- KEL cable entry frames (KEL-U, KEL, KEL-FA, KEL-FG)
- KVT cable glands

The innovative membrane enables the routing of cables with diameters that can vary up to 3 mm.

The KTMBS large allows for the routing of cable diameters from 12 to 29 mm.

The innovative wave cut and the flexible sealing lips make it possible to seal the cable with IP54/UL Type 12.

Advantages
- Routing of cables with and without connectors
- IP54 rating
- Strain relief when a suitable cable entry is selected
- Large clamping range
- Only 8 grommets cover a clamping range from 12 to 29 mm
- Innovative wave cut for a better sealing
- Innovative membrane for high flexibility

Specifications KT gray

Material	Elastomer
Flame class	UL 94-V0, self-extinguishing
IP rating	IP54
Temperature	-40°C to +100°C (static)
Properties	Silicone free, halogen free

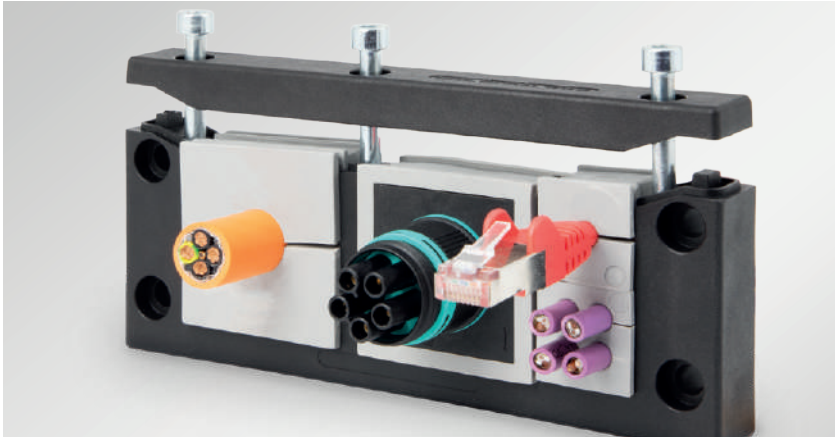
Specifications KT black

Material	Elastomer
Flame class	UL 94 HB
IP rating	IP54
Temperature	- 30°C to + 90°C (static)
Properties	Silicone-free Higher chemical resistance e.g. with aggressive oils, coolants

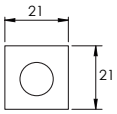
Accessories

ST-B Plugs	177

Description	Type	Clamping range	Compatible ST-B plugs	Order No gray	Order No black	PU
	KTMBS 12-15	12 – 15 mm	ST-B 14	41384	51384	10
	KTMBS 14-17	14 – 17 mm	ST-B 16	41385	51385	10
	KTMBS 16-19	16 – 19 mm	ST-B 18	41386	51386	10
	KTMBS 18-21	18 – 21 mm	ST-B 20	41387	51387	10
	KTMBS 20-23	20 – 23 mm	ST-B 22	41388	51388	10
	KTMBS 22-25	22 – 25 mm	ST-B 24	41389	51389	10
	KTMBS 24-27	24 – 27 mm	ST-B 26	41390	51390	10
	KTMBS 26-29	26 – 29 mm	ST-B 28	41391	51391	10



KT
Split Cable Grommets, Small, Multi and Special



Split cable grommets KT are used with the following cable entry components:
- KEL cable entry frames
- KVT split cable glands
- DB Distribution Box

KT multi-hole and special grommets enable a sealing of the cables with IP54 and UL Type 12.

When using double or quadruple grommets the cable density of cable entry frames and cable glands can be greatly increased. The multi-hole model range KT small is designed for cable diameters from 1 to 8 mm. icotek also offers special cable grommets for e.g. ASI lines. ATG adapter grommets provide the possibility to hold a small KT grommet to reduce the clamping range down to 1 mm.

When installing the small grommets in multiple rows, the flat sides should be facing each other. This allows the flat sides to match up and provide a secure seal.

Advantages
- Routing of pre-assembled cables through cable entry frames and split cable glands
- IP rating IP54
- Greatly increased cable density when using double or quadruple grommets
- High strain relief in accordance with EN 62444 when a suitable cable entry is selected
- Available for a wide range of cable diameters

Specifications KT gray

Material	Elastomer
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54
UL type rating	up to UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 100°C (static)
Properties	Halogen-free, silicone-free

Specifications KT black

Material	Elastomer
Flame class	UL 94 HB
IP rating	IP54
Temperature	- 30°C to + 90°C (static)
Properties	Silicone-free Higher chemical resistance e.g. with aggressive oils, coolants

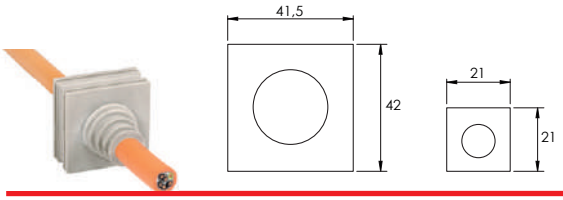
Accessories

ST Plugs	87

Description		Type	Order No gray	Order No black	Clamping range	PU
	KT 2|×	KT 2|1	39942	39944	2× ø 1 mm / 0.003 "	10
		KT 2|2	39935	39936	2× ø 2 mm / 0.079 "	10
		KT 2|3	39939	39940	2× ø 3 mm / 0.118 "	10
		KT 2|4	39906	39907	2× ø 4 mm / 0.157 "	10
		KT 2|5	41200	39904	2× ø 5 mm / 0.197 "	10
		KT 2|6	41201	39905	2× ø 6 mm / 0.236 "	10
		KT 2|7	41202	39916	2× ø 7 mm / 0.276 "	10
		KT 2|8	39917	39918	2× ø 8 mm / 0.315 "	10
	KT 4|×	KT 4|2	39937	39938	4× ø 2 mm / 0.079 "	10
		KT 4|3	39914	39915	4× ø 3 mm / 0.118 "	10
		KT 4|4	39909	39911	4× ø 4 mm / 0.157 "	10
		KT 4|5	39908	39910	4× ø 5 mm / 0.197 "	10
		KT 4|6	39932	39933	4× ø 6 mm / 0.236 "	10
	KT ASI	KT-ASI	39902	39903	1 ASI-cable	10
		KT-ASI2|rl	39922	39924	2 ASI-cables	10
		KT-ASI2|ll	39921	39923	2 ASI-cables	10
	KT oval	KT oval	39930	–	approx. 8 × 4 mm / 0.315 x 0.157 "	10
	KT S1	KT S1	39931	–		10
	KT tele	KT tele	39929	–	Telephone cable	10
		KT tele1	41257	–	Data cable RJ12	10
		KT tele2	41258	–	Data cable RJ10 / RJ45	10

*Only valid for gray product types

KT-DPF
Multi-Range Cable Grommets, in Pyramid Shape, Non-Split



The multi-range KT-DPF grommets accept a wide range of cable diameters. A great benefit when the exact cable diameter is not known in advance. Due to the flexibility and unique pyramid shape, routing and flexible positioning of rigid cables is much easier compared to using conventional cable glands. It is recommended that additional strain relief be provided for the cables using a cable tie.

The KT-DPF small allows for the routing of cable diameters from 3 to 12 mm, the KT-DPF for diameters from 4 to 26 mm.

The KT-DPF grommets are not split and therefore only usable for cables without connectors.

Cutting of KT-DPF grommets: Cable diameter less 20%.

Advantages

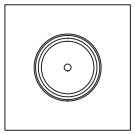
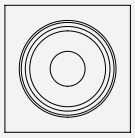
- Routing of cables without connectors through cable entry frames and split cable glands
- IP rating IP54
- High strain relief when a suitable cable entry is selected
- Large clamping range
- Only 3 grommets cover a clamping range from 3 to 26 mm
- Flexible even with rigid cables
- Ideal for wiring non pre-terminated cables locally
- Easy storage

Specifications KT gray

Material	Elastomer
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	-40°C to +100°C (static)
Properties	Halogen-free, silicone-free

Specifications KT black

Material	Elastomer
Flame class	UL94-HB
IP rating	IP54
Temperature	-30°C to +90°C (static)
Properties	Silicone-free Higher chemical resistance e.g. with aggressive oils, coolants

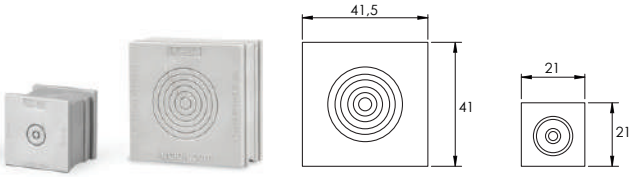
Description	Type	Order No gray	Order No black	Size KT	Clamping range	PU
	KT-DPF-A	41260	41360	KT small	3 – 12 mm	10
	KT-DPF-B	41261	41361	KT large	4 – 18 mm	10
	KT-DPF-C	41262	41362	KT large	14 – 26 mm	10

KMS Cable Template

Page 401
Order No. 39800

*Only valid for gray product types

KT-SC
Multi-Range Cable Grommets, Non-Split



Description	Type	Order No.	Size KT	Clamping range	PU
	KT-SC small	41490	KT small	4 – 12 mm 0.157 - 0.472 "	10
	KT-SC large	41485	KT large	5 - 28 mm 0.20 - 1.10 "	10

The KT-SC grommets accept a wide range of cable diameters. This is a great benefit when the exact cable diameter is not known in advance.

The single circular membrane can be peeled away to accommodate the specific diameter of the cable or hose. For this purpose, only a small hole between the rings needs to be pierced. Then the corresponding ring can be removed. The peeled-off area is always round, ensuring a secure seal around cable/hose.

The KT-SC cable grommet is based on the KT grommet and enables flexible routing and sealing (IP54) of electrical cables and pneumatic hoses with diameters from 4 to 28 mm.

The KT-SC cable grommets are not split and therefore only usable for cables without connectors. However, it is possible to feed through cables with a pre-mounted cable lug.

Advantages

- Routing of cables without connectors
- IP rating IP54
- Large clamping range
- Circular membranes can be peeled off easily
- Flexible even with rigid cables
- Ideal for wiring non pre-terminated cables locally
- Easy storage

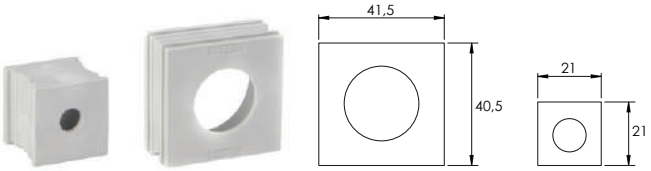
Specifications

Material	Elastomer
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	-40°C to +100°C (static)
Properties	Halogen-free, silicone-free

KMS Cable Template

Page 401
Order No. 39800

KTMB
Multi-Range Cable Grommets, Non-Split



The KTMB grommets accept a wide range of cable diameters. A great benefit when the exact cable diameter is not known in advance.

The KTMB grommets are not split and therefore only usable for cables without connectors.

The model range KTMB small covers a diameter range from 2.5 to 16 mm, the model range KTMB large covers a diameter range form 13 to 33 mm.

Advantages

- Routing of cables without connectors
- IP rating IP54
- Ideal for wiring non pre-terminated cables locally
- Easy storage

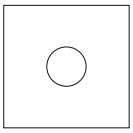
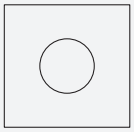
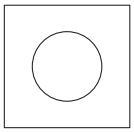
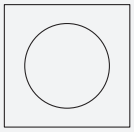
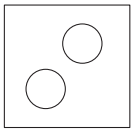
Specifications

Material	Elastomer
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	-40°C to +100°C (static)
Properties	Halogen-free, silicone-free

Accessories

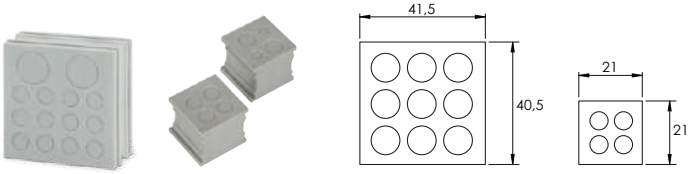
ST-B Plugs	177

Cross section KTMB

Description	Type	Order No.	Size KT	Clamping range	PU
	KTMB-A	41432	KT small	2.5 - 6.5 mm 0.098 - 0.256 "	10
	KTMB-B	41434	KT small	4 - 7.5 mm 0.157 - 0.295 "	10
	KTMB-C	41436	KT small	6.5 - 10 mm 0.26 - 0.394 "	10
	KTMB-D	41438	KT small	9.5 - 13 mm 0.374 - 0.512 "	10
	KTMB-E	41440	KT small	13 - 16 mm 0.512 - 0.63 "	10
	KTMB-G	41460	KT large	13 - 18 mm 0.512 - 0.709 "	10
	KTMB-H	41465	KT large	18 - 23 mm 0.709 - 0.906 "	10
	KTMB-I	41470	KT large	23 - 28 mm 0.906 - 1.102 "	10
	KTMB-J	41475	KT large	28 - 33 mm 1.102 - 1.299 "	10
	KTMB-K	41480	KT large	2×13 - 18 mm 0.512 - 0.709 "	10

1
1.11
1.12
1.13
1.14
1.15
1.2
1.21
1.22
1.23
1.24
1.25
1.3

KT-DT
Membrane Cable Grommets, Non-Split



The KT-DT cable grommets can be used anywhere where a large number of electrical, pneumatic or hydraulic lines must be routed and sealed with IP54. By using the KT-DT grommets, the cable density can be significantly increased.

KT-DT grommets are compatible with split cable entry frames, such as KEL-U, KEL and KEL-FG. The routing of cables with and without preassembled connectors in one cable entry frame can thus be easily combined.

KT-DT 1 – KT-DT 5 grommets are designed to fit in KT large grommet spaces. KT-DT 7 and KT-DT 8 grommets are designed to fit in KT small grommet spaces.

The KT-DT grommets are also perfectly suitable for the assembly of subsequently terminated cable harnesses.

Advantages

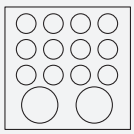
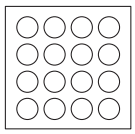
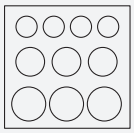
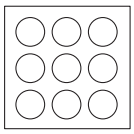
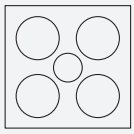
- Combination of routing pre-terminated cables and cables without connectors with one cable entry frame
- IP54 rating
- High cable density
- Enables sub-assembly of cable harnesses

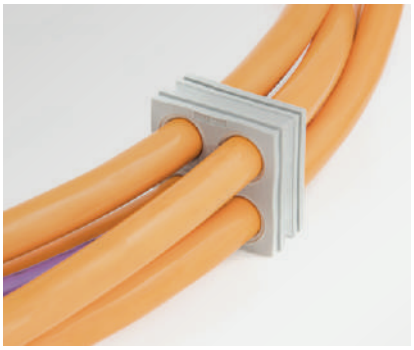
Specifications

Material	Elastomer
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	- 40°C to + 100°C (static)
Properties	Halogen-free, silicone-free

Accessories

ST-B Plugs	177

Description	Type	Order No.	Number of cables	PU
	KT-DT 1	41500	12× max. 6.5 mm / 0.256 " 2× max. 12.2 mm / 0.48 "	10
	KT-DT 2	41510	16× max. 7.1 mm / 0.28 "	10
	KT-DT 3	41520	4× max. 6.5 mm / 0.256 " 3× max. 9.5 mm / 0.374 " 3× max. 11.3 mm / 0.445 "	10
	KT-DT 4	41530	9× max. 9.5 mm / 0.374 "	10
	KT-DT 5	41540	4× max. 14.5 mm / 0.571 " 1× max. 9.5 mm / 0.374 "	10
	KT-DT 7	41550	4× max. 6 mm / 0.236 "	10
	KT-DT 8	41552	2× max. 7 mm / 0.276 " 2× max. 4 mm / 0.157 "	10



ST
Plugs for Cable Grommets

Plugs are used to close either KT or QT grommets which are not equipped with cables. IP ratings of the grommets remain.

Perfect for applications where cables have been removed or might be routed at a later stage.

Advantages & benefits

- Sealing unused cable grommets

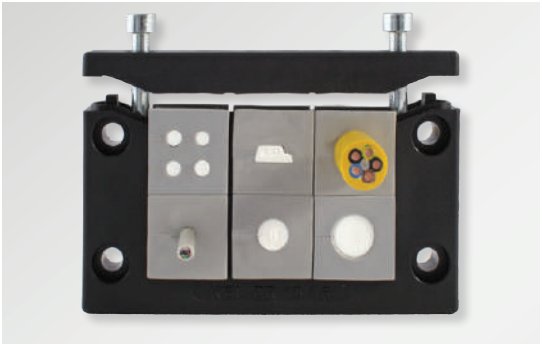
Specifications

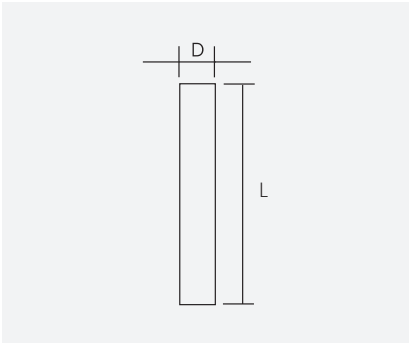
Material	Polyamide (PA), white
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP rating of grommets remains
UL type rating	UL type 12 (acc. to UL 50E)
Temperature	-40°C to +120°C
Properties	Halogen-free, silicone-free

Compatible with

KT Cable grommets	74 - 89
QT Cable grommets	118 - 120

Type	Diameter D	Length L	Order No.	PU
ST 1	1 mm / 0.039 "	25 mm / 0.984 "	42900	25
ST 2	2 mm / 0.078 "	25 mm / 0.984 "	42909	25
ST 3	3 mm / 0.118 "	25 mm / 0.984 "	42901	25
ST 4	4 mm / 0.157 "	25 mm / 0.984 "	42908	25
ST 4,5 NEW	4,5 mm/ 0.177“	25 MM / 0.984“	42907	25
ST 5	5 mm / 0.197 "	25 mm / 0.984 "	42906	25
ST 6	6 mm / 0.236 "	25 mm / 0.984 "	42903	25
ST 7	7 mm / 0.276 "	25 mm / 0.984 "	42905	25
ST 8	8 mm / 0.315 "	20 mm / 0.787 "	42899	25
ST 9	9 mm / 0.354 "	20 mm / 0.787 "	42897	25
ST 10	10 mm / 0.394 "	20 mm / 0.787 "	42895	25
ST 11	11 mm / 0.433 "	20 mm / 0.787 "	42893	25
ST 12	12 mm / 0.472 "	20 mm / 0.787 "	42891	25
ST 13	13 mm / 0.512 "	20 mm / 0.787 "	42889	25
ST 14	14 mm / 0.551 "	20 mm / 0.787 "	42887	25
ST 15	15 mm / 0.591 "	20 mm / 0.787 "	42885	25
ST 16	16 mm / 0.63 "	20 mm / 0.787 "	42883	25
ST 17	17 mm / 0.669 "	20 mm / 0.787 "	42881	25
ST ASI	–	25 mm / 0.984 "	42877	25





Cover Plugs
for Cable Entry Frames

The openings at the fastening points of the cable entry frames can be closed with the cover plugs.

There are two versions: One version to cover the openings when using threaded bushings, one to cover the screws. The cover plugs can be used with the products of the KEL series.

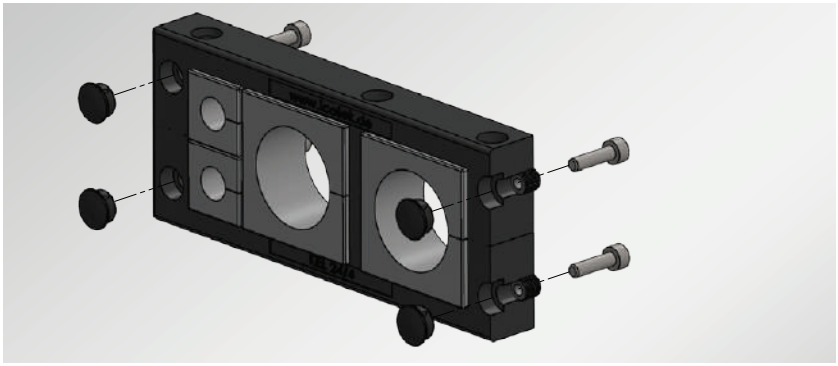
Advantages

- Simple closing of the openings at the fastening points of the KEL
- Smooth finish on the frame surface
- No dirt recesses

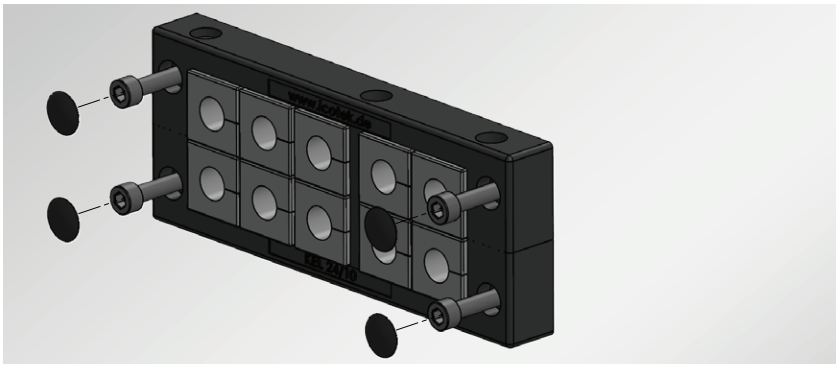
Specifications

Material	Polyethylene (PE)
Temperature	Continuous operating temperature +70°C
Properties	Higher chemical resistance

Description	Order No.	PU
Cover plugs **A** black for threaded bushings, for KEL	99142	100
Cover plugs **B** black for M5 DIN 912 Screws, for KEL	99200	40



When fastening from the rear using a threaded bushing, an opening is created at the front at the fastening points. These can be closed with the **cover plugs A** in black (Order No. 99142).



When fastening from the front by means of screws, the openings at the screw heads can be closed with the **cover plugs B** in black (order no. 99200). The cover plugs can only be used for M5 DIN 912 screws.

KT ServiceBox
Service Box
for Cable Grommets

Convenient—everything available right away!

The KT ServiceBox is perfect for installations and service calls. It ensures your KT grommets are readily available.

Content*

Cable grommets, small

110 KT for cables 1 – 17 mm
10 BTK blank grommets
10 KTMB multi-range grommets
1 KT-DPF mutli-range grommets
1 AT-K-M 12x1.5
2 KT-DT

Cable grommets, large

25 KT for cables 16 – 35 mm
4 BTG blank grommets / ATG adapter grommets
3 KTMB multi-range grommets
2 KT-DT multi-membrane grommets
2 KT-DPF multi-range grommets
2 KT-SC
1 AT-M 12x1.0
1 AT-KS

Accessories

1 Cable entry frame KEL-U 10|3
1 Cable entry frame KEL-E3
1 Split cable gland KVT

1 Cable template

* Subject to alterations

Description	Order No.	PU
KT ServiceBox	88001	1

KMS
Cable Template

The correct size of the KT grommets can easily be determined by using the cable template.

- Determining the diameter of the cable using the cable template
- Selecting the KT grommets according to the data on the cable template

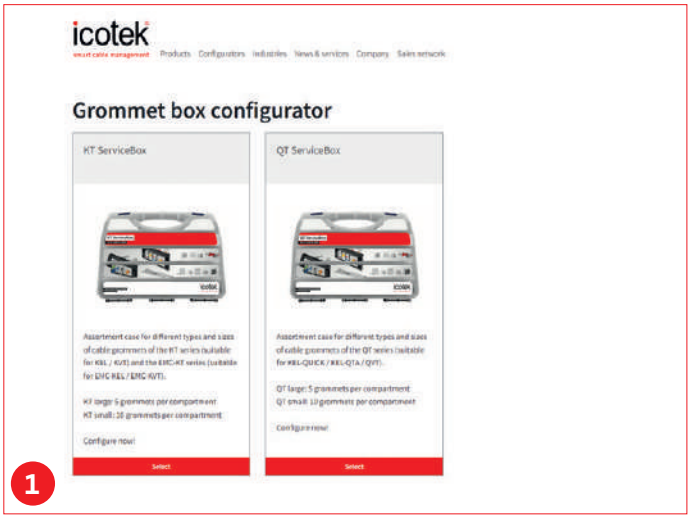
Cable templates can also be ordered separately.

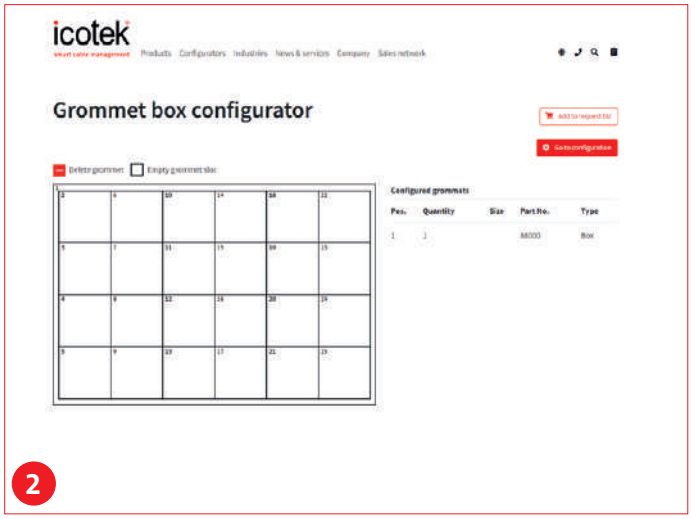
Description	Order No.	PU
Cable template	39800	1

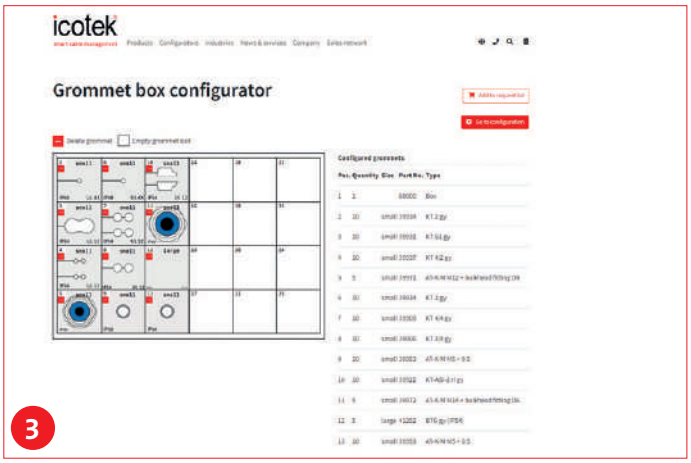
Compile your own ServiceBox? Now it‘s easy with the Grommet Box Configurator!

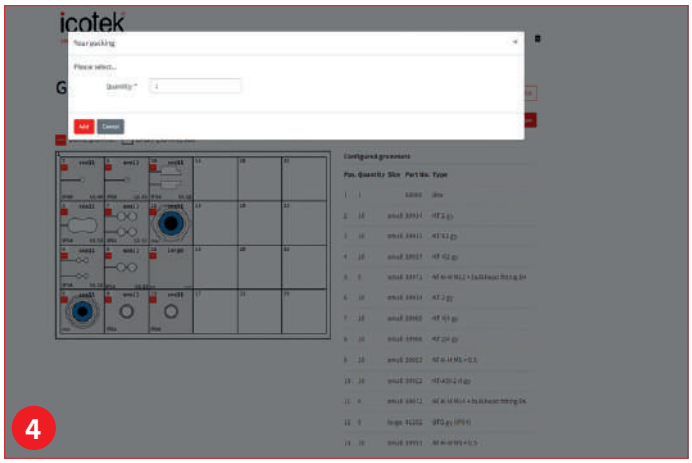
No more searching in vain for the right grommet: Now the assortment cases for different types and sizes of cable grommets of the KT or the QT series can be configured individually. So the perfect grommets are always at hand.

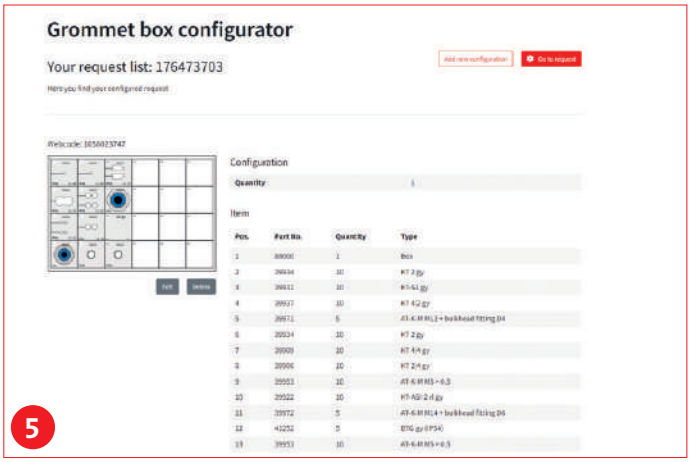
Start the configurator: www.icotek.com/en-us/config/626044







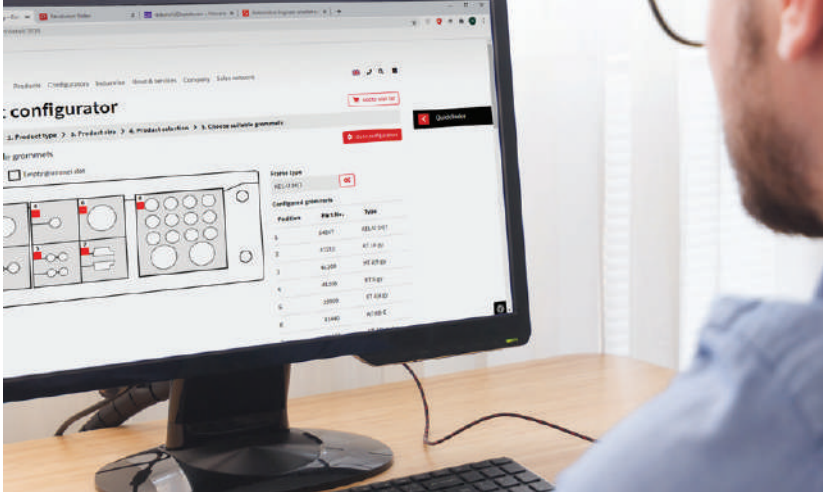


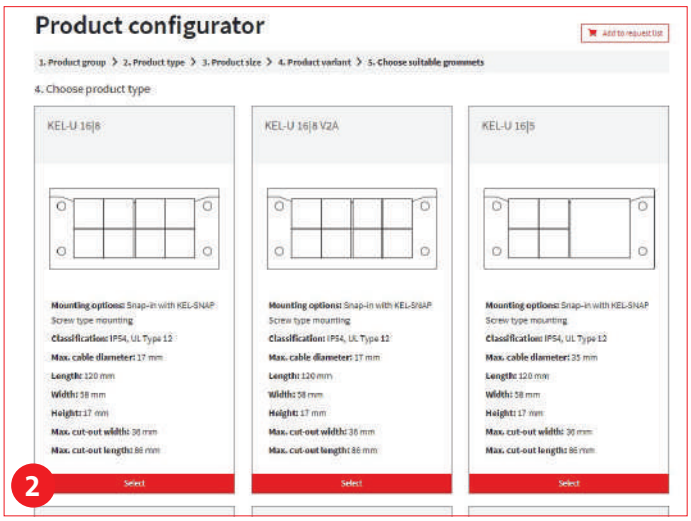


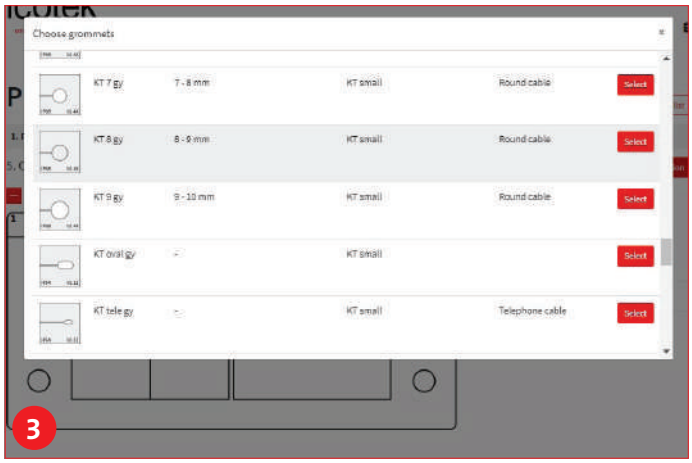
The Practical Product Configurator

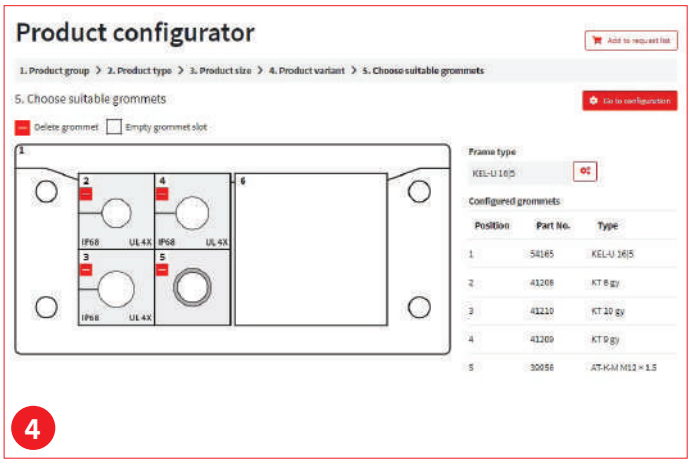
With the product configurator, you can now assemble your cable entry system with the required cable or adapter grommets.

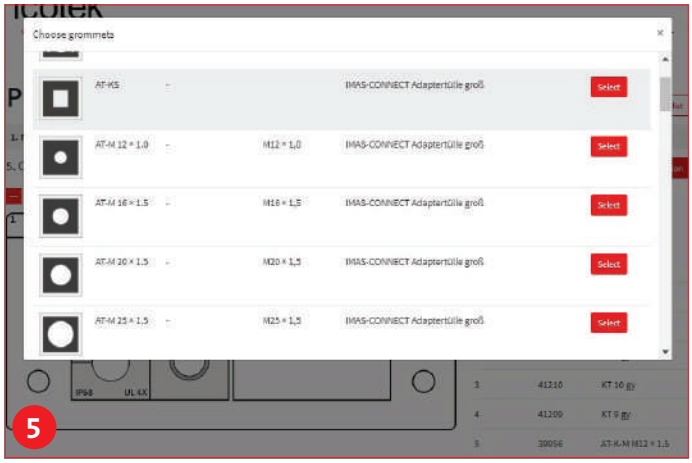
Check it out: www.icotek.com/en-us/config

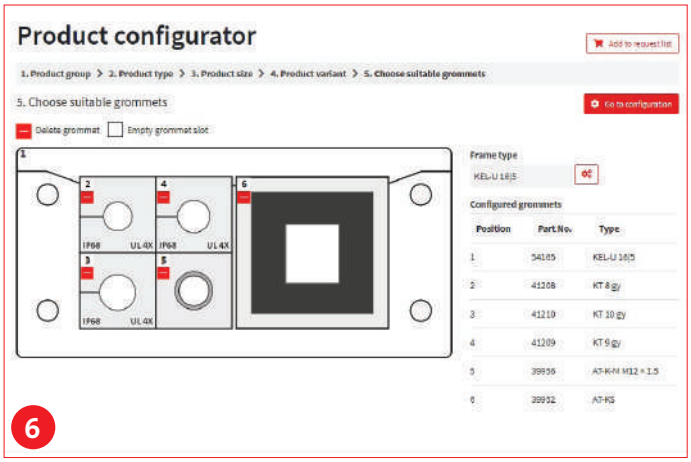












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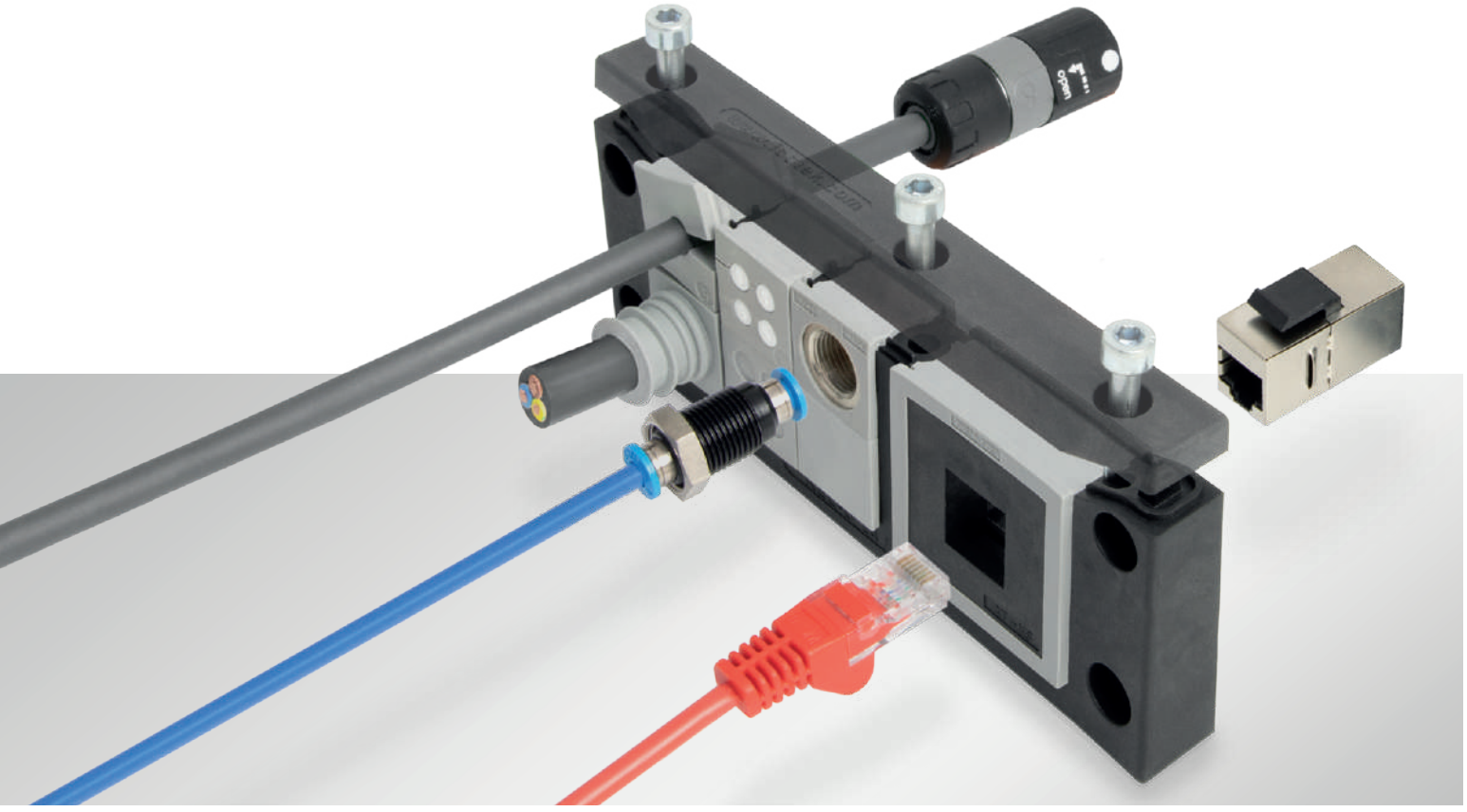
1.15 Modular Adapter System
IMAS-CONNECT™ for the KT System

Simply configure the most individual cable entry in the world

The IMAS-CONNECT™ adapter system is a modular designed grommet system for mounting metric connectors, PushPull modules, Keystone couplers, hose fittings, pressure compensation elements and much more.

By utilising the modular adapter system, the cable entry frame becomes a hybrid system. Pre-terminated and standard cables or hoses can be routed. At the same time the system serves as a unique interface for all kinds of connectors. This means that only one interface or cut-out is required for various cables and connections.

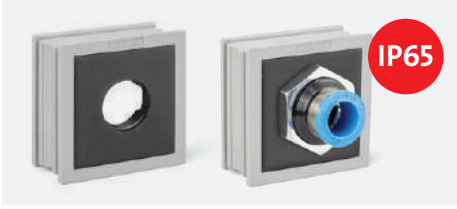
The elastomer grommets with polyamide body fit perfectly into the icotek cable entry frames e.g. KEL-U, KEL-ER, KEL-FG and comply with protection classes IP54 to IP66.



Adapter Grommet, Small
with Threaded Insert

AT-K-M | AT-K-Z

94



Adapter Grommet, Large
with Metric Inner Thread

AT-M

95

Adapter Grommet, Blank, Large

AT-B

95

Adapter Grommet, Large
for M23 Square Flange

AT-FL

96

Adapter Grommet, Large
for PushPull Connector Systems

AT-PP

97

Adapter Grommet, Large
for industrial connectors 3A or 4A

AT-HA

98

Adapter Grommet, Large
for Keystone Couplers

AT-KS

99

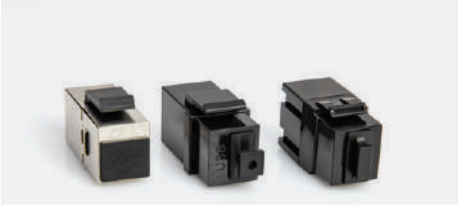
Adapter Grommet, Large
for Keystone Couplers,
with Protection Cover

AT-KS-AK

100

Adapter Grommet, Large
with Mounted Keystone Modules
or Bulkhead Couplings
Product Set

101



Keystone Modules, Single,
Bulkhead Couplings
and Accessories

102

Pressure Compensation Element
with Metric Thread

PCE

361

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AT-K-M | AT-K-Z
Adapter Grommet, Small with Threaded Insert

The AT-K-M grommet is constructed on the basis of a KT cable grommet. The grommets are made of elastomer with a nickel-plated brass body. The AT-K-M grommets are available with inner threads in sizes M5 x 0.5, M8 x 0.5, M8 x 1.0, M12 x 1.0, M12 x 1.5, M14 x 1.0 and M16 x 1.5 and the AT-K-Z grommets with inner threads in sizes 1/8" and 1/4".

By using the AT-K-M adapter grommet, several connectors can be inserted directly into the cable entry frame, e.g. pneumatic bulkhead connectors M12 x 1.0 and M14 x 1.0, metric connectors and pressure compensation elements.

They are compatible with all split icotek cable entry systems that are suitable for KT cable grommets.

Advantages & Benefits

- By using AT-K-M grommets, panel connectors and sockets can be integrated directly into the cable entry system
- Separate cut-outs for connectors are no longer necessary
- Space-saving solution
- Thread sizes M5 to M16 and 1/8" to 1/4" available

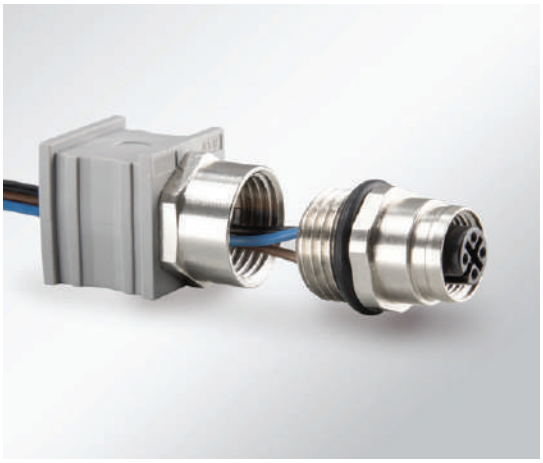
Specifications

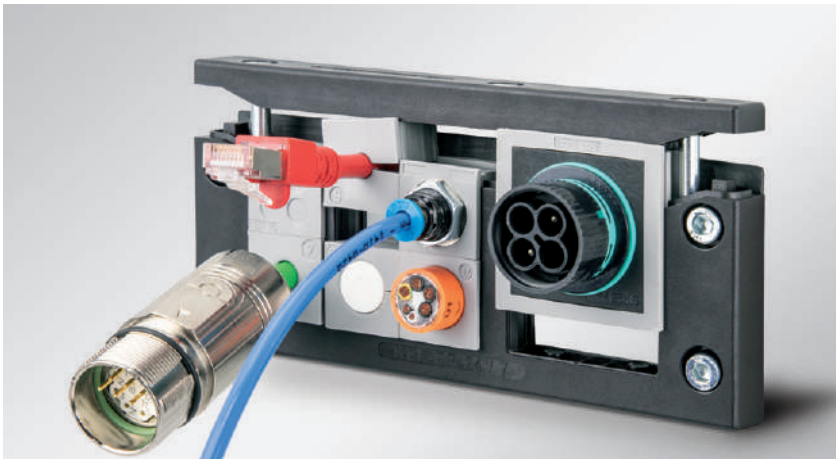
Material	Grommet: Elastomer Body: nickel-plated brass
Flame class	UL 94 V-0, self-extinguishing
Protection class	IP66 when using correct components
Temperature	-40°C bis +100°C (static) -40°F to +212°F (static)
Properties	Halogen free, silicone free

Accessories

PCE	361
Bulkhead coupling	102

Type	Order No.	Height × Width × Length	Thread	Material	PU
AT-K-M 5x0.5	39953	21 x 21 x 19 mm 0.827 x 0.827 x 0.748"	M5 x 0.5	Brass / Elastomer	5
AT-K-M 8x0.5	39966	21 x 21 x 19 0.827 x 0.827 x 0.748"	M8 x 0.5	Brass / Elastomer	5
AT-K-M 8x1.0	39954	21 x 21 x 19 mm 0.827 x 0.827 x 0.748"	M8 x 1.0	Brass / Elastomer	5
AT-K-M 12x1.0	39955	21 x 21 x 19 mm 0.827 x 0.827 x 0.748"	M12 x 1.0	Brass / Elastomer	5
AT-K-M 12x1.5	39956	21 x 21 x 19 mm 0.827 x 0.827 x 0.748"	M12 x 1.5	Brass / Elastomer	5
AT-K-M 14x1.0	39962	21 x 21 x 19 mm 0.827 x 0.827 x 0.748"	M14 x 1.0	Brass / Elastomer	5
AT-K-M 16x1.5	39957	21 x 21 x 19 mm 0.827 x 0.827 x 0.748"	M16 x 1.5	Brass / Elastomer	5
AT-K-Z 1/8"	39963	21 x 21 x 19 mm 0.827 x 0.827 x 0.748"	1/8"	Brass / Elastomer	5
AT-K-Z 1/4"	39964	21 x 21 x 19 mm 0.827 x 0.827 x 0.748"	1/4"	Brass / Elastomer	5





AT-K-M with extension M16x1,5 for M12 built-in connectors

AT-M | AT-B
Adapter Grommet, Large with Metric Inner Thread

AT-M is a grommet (based on large KT grommets) with integrated metric threads, suitable for split icotek cable entry systems. The AT-M grommets are made of elastomer with a polyamide body. AT-M grommets are available with inner threads in sizes M12x1.0, M16x1.5, M20x1.5 and M25x1.5.

The AT-M is ideal for creating an interface for signal, data, power and hybrid connectors by simply screwing them into the AT-M thread. Pressure compensation elements or conduit connectors up to M25x1.5 can also be screwed into the AT-M.

icotek also offers screw plugs for sizes M16, M20 and M25 to close the new adapter grommet with the metric internal thread AT-M.

There is also a blank AT-B grommet available. The integrated polyamide body is completely closed on one side. The effective area is 24 x 24 mm (0.94 x 0.94"), the wall thickness is 6 mm (0.24"). Custom drill-holes and cut-outs can be made here for e.g. installation of screw mounted hybrid connectors.

Advantages & Benefits

- By using AT-M grommets, panel connectors and sockets can be integrated directly into the cable entry system
- Separate cut-outs for connectors are no longer necessary
- Space-saving solution
- Thread sizes M12 to M25 available
- Blank grommet for flexible use

Specifications

Material	Grommet: Elastomer Body with thread: Polyamide
Flame class	UL94-V0, self-extinguishing
Protection class	IP65 when using correct components
Temperature	-40°C to +100°C (static) -40°F to +212°F (static)
Properties	Halogen free, silicone free

Type	Order No.	Height × width × length [mm]	Thread	Material	PU
AT-M 12x1.0	39946	42 x 41.5 x 19 1.65 x 1.63 x 0.75"	M12 × 1.0	PA / Elastomer	10
AT-M 16x1.5	39947	42 x 41.5 x 19 1.65 x 1.63 x 0.75"	M16 × 1.5	PA / Elastomer	10
AT-M 20x1.5	39948	42 x 41.5 x 19 1.65 x 1.63 x 0.75"	M20 × 1.5	PA / Elastomer	10
AT-M 25x1.5	39949	42 x 41.5 x 19 1.65 x 1.63 x 0.75"	M25 × 1.5	PA / Elastomer	10
AT-B blank	39950	42 x 41.5 x 19 1.65 x 1.63 x 0.75"	–	PA / Elastomer	10

Screw plugs for AT-M

Type	Order No.	Thread	Material	PU
Screw plug M16 × 1.5	99195	M16	Polyamide	10
Screw plug M20 × 1.5	99196	M20	Polyamide	10
Screw plug M25 × 1.5	99197	M25	Polyamide	10

KEL-U 24|7 mounted with 1x AT-M, with connector M12x1.0 for the connection of sensors

AT-FL
Adapter Grommet, Large for M23 Square Flange

Type	Order No.	Height × width × length [mm]	Material	PU
AT-FL	39965	42 x 41.5 x 19 1.65 x 1.63 x 0.75"	PA/Elastomer	5

The grommet AT-FL is constructed on the basis of a large KT cable grommet. The polyamide body is molded with elastomer. All square flanges with dimensions 19.8 x 19.8 mm (M23) can be integrated.

The insertion of AT-FL into an icotek cable entry frame enables the routing of cables with and without connectors in combination with the creation of interfaces for M23 connectors within one cable entry system. Separate cut-outs for connectors are no longer necessary.

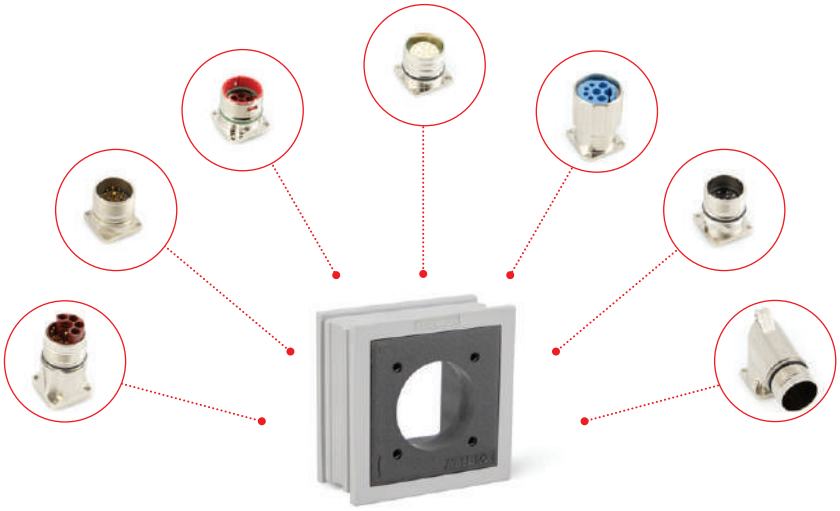
AT-FL provides ingress protection of up to IP65 (depending on the used flange and connector).

Advantages & benefits

- By using the AT-FL grommet, connectors can be integrated directly into the cable entry frame
- Separate cut-outs for connectors are no longer necessary
- Space-saving solution
- Cost-saving assembly

Specifications

Material	Grommet: Elastomer Body: Polyamide
Flame class	UL 94 V-0, self-extinguishing
Protection class	IP54, IP55, IP64, IP65
Temperature	-40°C to +100°C (static) -40°F to +212°F (static)
Properties	Halogen free, silicone free



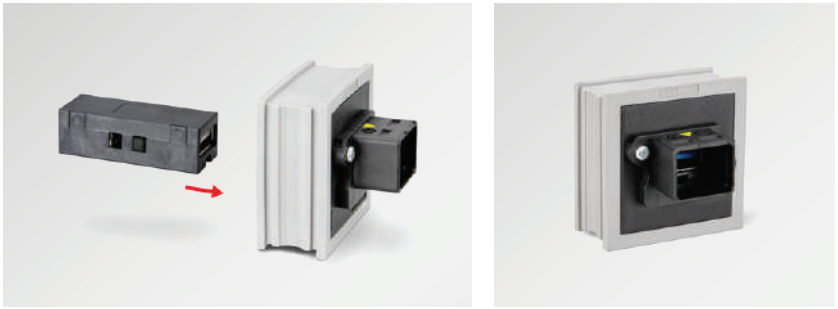
AT-PP
Adapter Grommet, Large for PushPull Connector Systems

Type	Order No.	Height × width × length [mm]	Material	PU
AT-PP	39961	42 x 41.5 x 19 1.65 x 1.63 x 0.75"	PA / Elastomer	5

The grommet AT-PP is constructed on the basis of a large KT cable grommet. In this elastomer grommet, a polyamide body is integrated. All modules based on the PushPull system can be inserted into the grommet.

By using the grommet AT-PP, the split cable entry frame can be used to route pre-terminated cables and at the same time it can also be used as an interface for connectors. This can save additional cut-outs and reduce labour costs.

PushPull modules and add-on housings are not included in the scope of delivery.



The module (left) snaps into the rear of the add-on housing mounted on the AT-PP

Advantages & Benefits

- By using AT-PP grommets, panel connectors and sockets can be integrated directly into the cable entry system
- Separate cut-outs for connectors are no longer necessary
- Time saving solution
- Space-saving solution
- Assembly costs are reduced

Specifications

Material	Grommet: Elastomer Body with thread: Polyamide
Flame class	UL94-V0, self-extinguishing
Protection class	IP65 when using correct components
Temperature	-40°C to +100°C (static) -40°F to +212°F (static)
Properties	Halogen free, silicone free

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AT-HA
Adapter grommet, large
for industrial connectors 3A or 4A

NEW | cULus in progress | IP54 | IP65 | ECOLAB certified | UV ISO 4892-2A | CE | UKCA | RoHS compliant | Made in Germany

The AT-HA grommet enables the direct integration of 3A or 4A inserts into an adapter grommet – without the need for an additional cut-out. The AT-HA grommet is based on a large KT cable grommet. A robust polyamide body is integrated into the grommet. It is fully compatible with all icotek cable entry frames of the KT system and is supplied ready for use with a pre-assembled locking element.

In combination with the 3A or 4A insert sets and matching connector housings for M20 or M25 with cable gland, the AT-HA grommet offers a compact, efficient and flexible solution for use in industrial applications.

User benefits

- Space-saving thanks to integration of the connector in the cable entry frame
- Can be combined with existing frame solutions
- No additional cut-outs are required
- Very easy to assemble
- Compatible with numerous insert manufacturers

Features

- High degree of protection IP65 when plugged in
- Housing with M20 cable gland for cable diameters of 6 – 12 mm or M25 for cable diameters of 13 – 18 mm available

Specifications

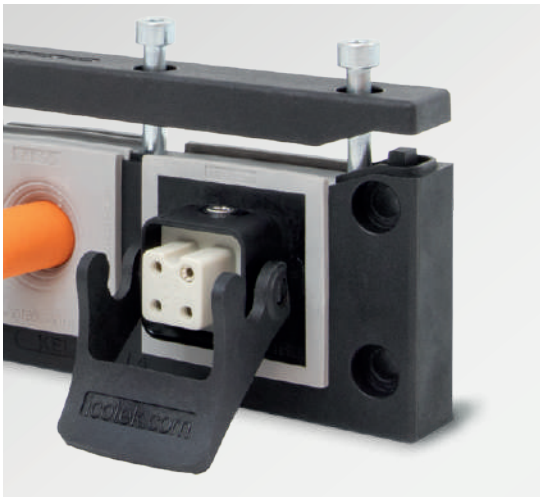
Material	Grommet: Elastomer, body: Polyamide
Flame class	UL 94 V-0, self-extinguishing
Protection class	IP54 with protective cover (optionally available) IP65 when plugged in
Temperature	-40°C to +100°C (static)
Properties	Halogen free, silicone free

Type	Height × Width × Length	Material	Suitable for insert	Order No.	PU
AT-HA	42 x 41,5 x 19 mm	Polyamid, Elastomer	Insert 3A or 4A	39985	5

Compatible housings and inserts

Type	with cable gland	Suitable for insert	Order No.	PU
Housing KV 20	Cable gland M20	Insert 3A or 4A	55514	5
Housing KV 25	Cable gland M25	Insert 3A or 4A	55515	5

Type	Set consists of	Suitable for	Order No.	PU
Insert set 3A	Pin and socket insert 3A	AT-HA	55510	5
Insert set 4A	Pin and socket insert 4A	AT-HA	55511	5



AT-KS
Adapter Grommet, Large for Keystone Couplers

IP54 | RINA | ECOLAB certified | UV ISO 4892-2A | EN ISO 14644 | RoHS compliant | Made in Germany

The grommet AT-KS is constructed on the basis of a KT cable grommet. In this elastomer grommet, a polyamide body is integrated. All couplers based on the Keystone system can be simply snapped in.

By using the grommet AT-KS, the split cable entry frame can be used to route pre-terminated cables and at the same time it can also be used as an interface for connectors. This can save additional cut-outs and reduce labour costs.

Advantages & Benefits

- By utilizing the AT-KS grommet, connectors can be integrated directly into the cable entry frame
- Separate cut-outs for connectors are no longer necessary
- Space-saving solution
- Grommet is suitable for all Keystone couplers
- Snap-in assembly

Specifications

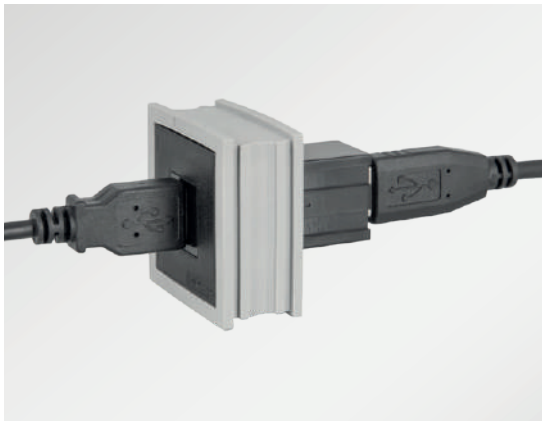
Material	Grommet: Elastomer Body: Polyamide
Flame class	UL94-V0, self-extinguishing
Protection class	IP54 depending on Keystone module and manufacturer
Temperature	-40°C to +100°C (static) -40°F to +212°F (static)
Properties	Halogen free, silicone free

Individual Keystone modules on page 102.

Type	Order No.	Height × Width × Length [mm]	Material	PU
AT-KS	39952	42 x 41.5 x 19 / 1.65 x 1.63 x 0.75"	PA/Elastomer	10

Adapter grommet with pre-assembled keystone modules

Type	Order No.	Height × Width × Length [mm]	Colour Keystone module	PU
AT-KS-USB 3.0	39968	42 x 41.5 x 19 / 1.65 x 1.63 x 0.75"	black	1
AT-KS-USB-C	39981	42 x 41.5 x 19 / 1.65 x 1.63 x 0.75"	black	1
AT-KS-HDMI	39969	42 x 41.5 x 19 / 1.65 x 1.63 x 0.75"	black	1
AT-KS-CAT6	39970	42 x 41.5 x 19 / 1.65 x 1.63 x 0.75"	silver	1
AT-KS-CAT7	39983	42 x 41.5 x 19 / 1.65 x 1.63 x 0.75"	silver	1



USB-, RJ45 or e.g. HDMI connectors can be plugged in from the front and from the back

AT-KS-AK

Adapter Grommet, Large for Keystone Couplers, with Protection Cover

The polyamide body integrated into the adapter grommet enables all modules based on the Keystone system to be snapped in. The interface can be closed and even sealed using a protective cover on the front.

By using the grommet AT-KS-AK, the split cable entry frame can be used to route pre-terminated cables and at the same time it can also be used as an interface for connectors. This can save additional cut-outs and reduce labour costs.

AT-KS-AK fulfils protection classes up to IP54 when the cover is closed (regardless of the Keystone module type and manufacturer).

Advantages

- By utilising the AT-KS-AK grommet, connectors can be integrated directly into the cable entry frame
- Separate cut-outs for connectors are no longer necessary
- Space-saving solution
- Easy to install thanks to lockable cover flap
- Cover flap can be secured by sealing

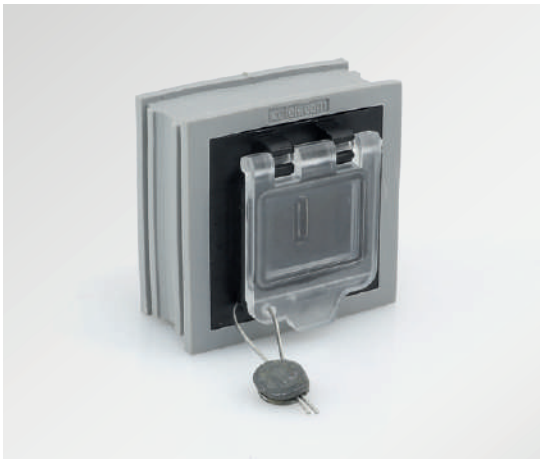
Specifications

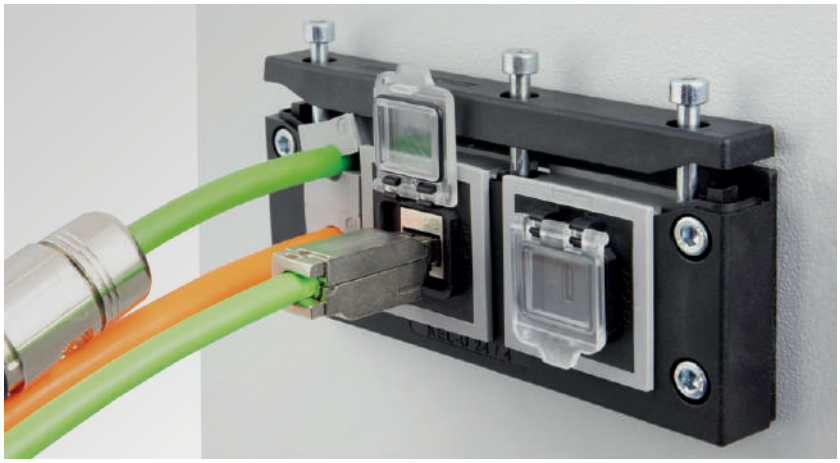
Material	Grommet: Elastomer Body: Polyamide Cover flap: Polycarbonate
Flame class	UL 94 V-0, self-extinguishing
Protection class	IP54 (certified according to EN 60529)
Temperature	-40°C to +100°C (static)
Properties	Halogen free, silicone free

Type	Order No.	Height × Width × Length [mm]	Material	PU
AT-KS-AK	39967 *	42 x 41.5 x 19 / 1.65 x 1.63 x 0.75"	PA/Elastomer/PC	10

Adapter grommet with mounted Keystone modules and protection cover

Type	Order No.	Height × Width × Length [mm]	Colour Keystone module	PU
AT-KS-AK-USB 3.0	39977	42 x 41.5 x 19 / 1.65 x 1.63 x 0.75"	black	1
AT-KS-AK-HDMI	39978 *	42 x 41.5 x 19 / 1.65 x 1.63 x 0.75"	black	1
AT-KS-AK-CAT6	39979 *	42 x 41.5 x 19 / 1.65 x 1.63 x 0.75"	silver	1
AT-KS-AK-CAT7	39982	42 x 41.5 x 19 / 1.65 x 1.63 x 0.75"	silver	1
AT-KS-AK-USB-C	39980	42 x 41.5 x 19 / 1.65 x 1.63 x 0.75"	black	1





Cover flap can be secured by sealing

Adapter Grommet
with Mounted Keystone Modules or Bulkhead Couplings, Product Set

The adapter grommets type AT-KS are also supplied with pre-assembled keystone modules, type AT-K-M with bulkhead couplings/fittings.

Advantages & Benefits

- By utilizing the AT-KS grommet, connectors can be integrated directly into the cable entry frame
- Separate cut-outs for connectors are no longer necessary
- Space-saving solution
- Keystone modules or bulkhead couplings/fittings are already pre-assembled

Specifications

Material	Grommet: Elastomer Body: Polyamide Bulkhead coupling: Brass nickel plated
Flame class	UL 94 V-0, self-extinguishing
Protection class	IP54 depending on Keystone module and manufacturer
Temperature	-40°C to +100°C (static)
Properties	Halogen free, silicone free

Type	Order No.	Height × Width × Length [mm]	Colour Keystone module	PU
AT-KS-USB 3.0	39968	42 x 41.5 x 19 1.65 x 1.63 x 0.75"	black	1
AT-KS-USB-C	39981	42 x 41.5 x 19 1.65 x 1.63 x 0.75"	black	1
AT-KS-HDMI	39969	42 x 41.5 x 19 1.65 x 1.63 x 0.75"	black	1
AT-KS-CAT6	39970	42 x 41.5 x 19 1.65 x 1.63 x 0.75"	silver	1
AT-KS-CAT7	39983	42 x 41.5 x 19 1.65 x 1.63 x 0.75"	silver	1

Type	Order No.	Height × Width × Length [mm]	suitable for pneumatic hose	PU
AT-K-M 12x1,0 with bulkhead coupling	39971 *	21 x 21 x 19	4 mm	1
AT-K-M 14x1,0 with bulkhead coupling	39972 *	21 x 21 x 19	6 mm	1
AT-K-Z 1/4" with 2x bulkhead fitting	39973	21 x 21 x 19	8 mm	1
AT-K-Z 1/4" with 2x bulkhead fitting	39974	21 x 21 x 19	10 mm	1
AT-K-Z 1/4" with 2x bulkhead fitting	39975	21 x 21 x 19	12 mm	1

Keystone Modules,
Bulkhead Couplings and Accessories

The Keystone modules and bulkhead couplings are also available individually for use with the adapter grommets.

Advantages & Benefits

- By utilizing the adapter grommets, connectors can be integrated directly into the cable entry frame
- Separate cut-outs for connectors are no longer necessary
- Space-saving solution
- Snap-in assembly

Specifications

Material	Bulkhead coupling: Brass nickel plated
Flame class	UL 94 V-0, self-extinguishing
Protection class	IP54 depending on module type and manufacturer
Temperature	-40°C to +100°C (static)
Properties	Halogen free, silicone free

Keystone modules

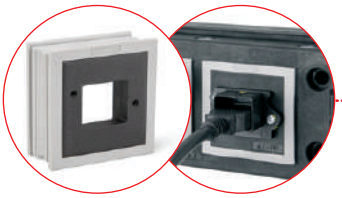
Type	Order No.	Colour	PU
Keystone module USB 3.0	99204	black	5
Keystone module USB-C	99212	black	5
Keystone module HDMI	99205	black	5
Keystone module CAT 6	99206	silver	5
Keystone module CAT 7	99213	silver	5

Bulkhead couplings

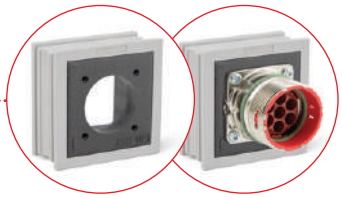
Type	Order No.	suitable for pneumatic hose	Thread	PU
Bulkhead coupling D4	99210	4 mm	M12 x 1.0	10
Bulkhead coupling D6	99211	6 mm	M14 x 1.0	10
Bulkhead fitting D8	99227	8 mm	1/4"	10
Bulkhead fitting D10	99228	10 mm	1/4"	10
Bulkhead fitting D12	99229	12 mm	1/4"	10

Dust caps

Type	Order No.	suitable for	PU
Dust caps for HDMI	99207	HDMI connectors	5
Dust caps for USB	99208	USB connectors	5
Dust caps for RJ-45	99209	RJ-45 connectors	5

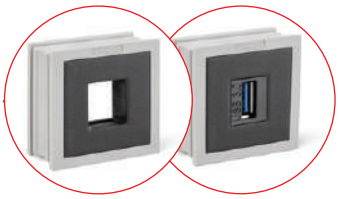


Available with pre-terminated cut-out for PushPull systems (AT-PP)

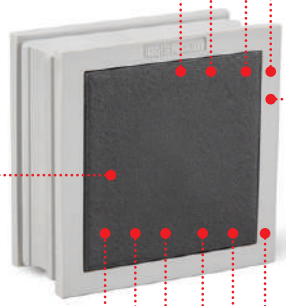


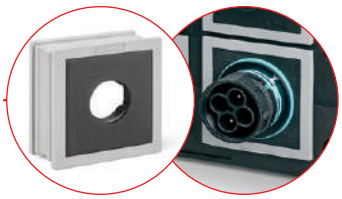
New: Adapter grommet for M23 square flange (AT-FL)

Available with threaded insert (AT-K-M/AT-K-Z), based on the KT cable grommet



Available with pre-terminated cut-out for Keystone couplers (AT-KS)





Available with metric inner threads of M12 x 1.0, M16 x 1.5, M20 x 1.5, M25 x 1.5 (AT-M)

Perfect integration into the split icotek cable entry frames

Available with protection cover for Keystone modules (AT-KS-AK)

At a high cable density only one cut-out is necessary

NEW

Adapter grommet for industrial connectors 3A or 4A (AT-HA)

Elastomer grommet with polyamide body based on the grommet KT large

High protection class: up to IP66

Usable area for special cut-outs and drill-holes: 24 x 24 mm (0.94 x 0.94");
Wall thickness: 6 mm (0.24") (AT-B)

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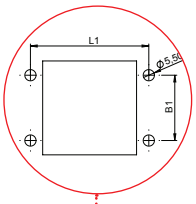
1.2 Cable Entry Systems
for the QT Grommet System

The QUICK systems are the perfect solution for the routing of cables with and without connectors when cost-effectiveness is the priority.

Here, too, the concept of consistent divisibility is applied. This system places great emphasis on tool-free assembly, for example in combination with the KEL-SNAP frame.

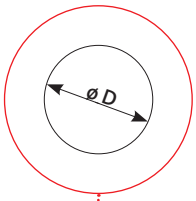
With the split QT grommets, cable diameters from 1 to 29 mm can be covered. With correct assembly, a protection class of IP54 is achieved.

The QTMB grommets allow the routing of cables with diameters that can vary up to 3 mm. By using the QT-DT grommet, the packing density of the cables can be considerably increased and the required installation space considerably reduced.

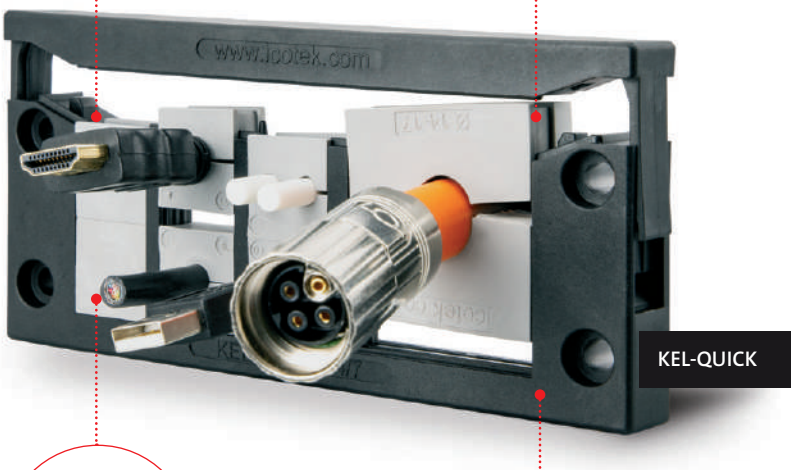


Cut-outs according to industrial standard dimensions

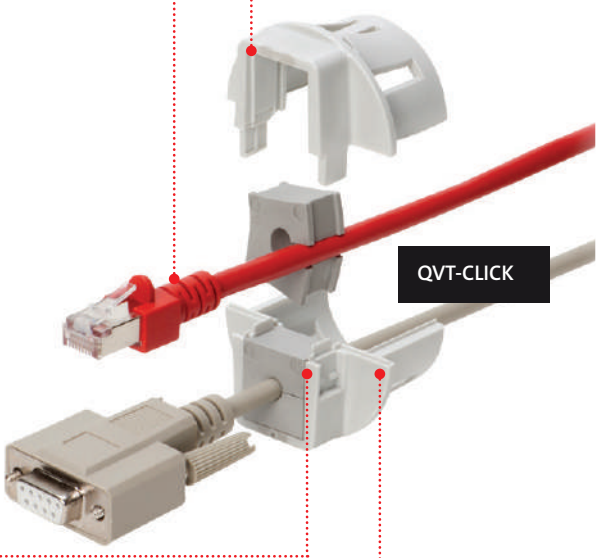
Warranty on pre-terminated cables remains



For metric cut-outs
M16 – M50



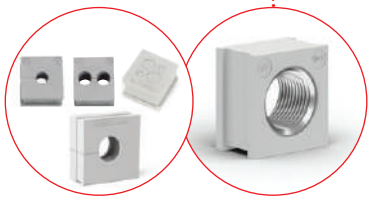
KEL-QUICK



QVT-CLICK

Fast and easy assembly

Split system



High cable density, wide variety in cable grommets and adapter grommets

Fast and easy assembly

Snap-in and screw-in assembly possible for QVT-CLICK sizes 16, 20, 40|1, 50|1, 50|4

Split Cable Entry Frames
for Quick Assembly,
for Standard Cut-Outs,
for Cable Diameters up to 29 mm

KEL-QUICK

107 – 109

Split Cable Glands
for Screw-In Assembly,
for Standard Cut-Outs,
for Cable Diameters up to 15 mm

QVT

110 – 112

Split Cable Glands
for Screw-In or Snap-In Assembly,
for Standard Cut-Outs,
for Cable Diameters up to 29 mm

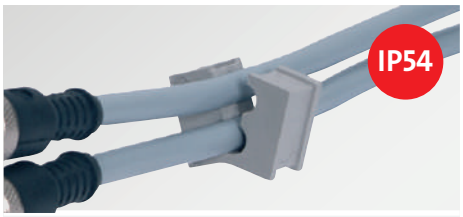
QVT-CLICK

111 – 113

Split Cable Entry Plates
for Push-In Assembly,
for Standard Cut-Outs,
for Cable Diameters up to 15 mm

KEL-QTA / KEL-QTE

115 – 117



Cable Grommets
for the QT system,
Split and Not Split,
for Cables with/without Connectors,
for Cable Diameters 1 – 29 mm

118 – 122

QT ServiceBox
Service Box for Cable Grommets

123

IMAS-CONNECT™
Modular Adapter System
for the QT System

92 – 101

Snap Mounting Frames | UL type 12
for Installation of KEL-U / KEL Frames

KEL-SNAP-S / KEL-SNAP

54 – 57

Thread Extension
for Cable Glands and Cable Entry Plates
M25, M32, M50, M63

TE-M

346 – 351

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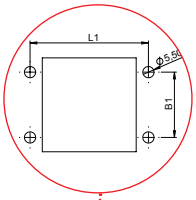
1.21 Split Cable Entry Frames
for the QT Grommet System

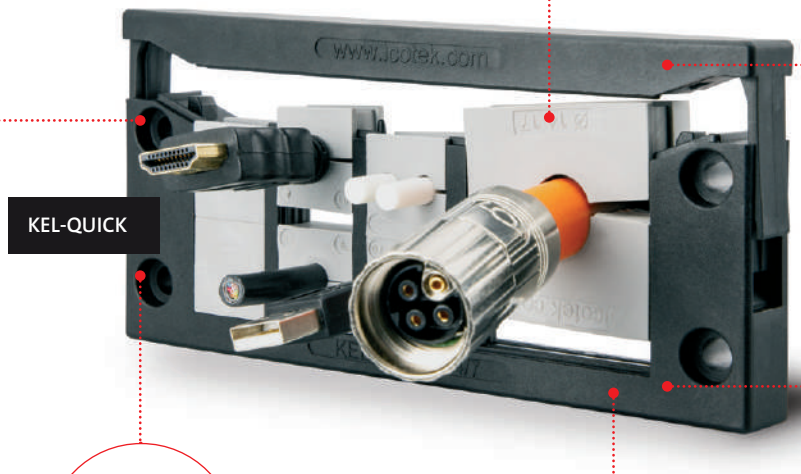
The QUICK systems are the perfect solution for the routing of cables with and without connectors when cost-effectiveness is the priority.

Here, too, the concept of consistent divisibility is applied. This system places great emphasis on tool-free assembly, for example in combination with the KEL-SNAP frame.



Cut-outs according to industrial standard dimensions

Warranty on pre-terminated cables remains



KEL-QUICK

High cable density, wide variety

Can be combined with IMAS-CONNECT grommets

Fast and easy assembly

Split system

KEL-QUICK Series
Cable Entry Frames for Quick Assembly with IP54 Rating

The KEL-QUICK range is a compact system to route and seal pre-terminated cables as well as conduits or pneumatic hoses utilizing split QT and QTMB grommets. After populating the entry frame with QT / QTMB grommets and cables, the cover lid is snapped onto the frame without using assembly hardware.

The KEL-QUICK frames match exactly the cut-out dimensions for 10-, 16- and 24-pin standard industrial connectors. The KEL-QUICK-B frames match the cut-out dimensions 46 × 36 mm. These KEL-QUICK frames can either be screw mounted or simply snapped into the KEL-SNAP frame.

The single-row KEL-QUICK-E versions are particularly suited for flat connectors. The small frames are ideal for applications with limited space.

A flat rubber gasket is included in the shipment.

Advantages & Benefits

- Fast and easy assembly and when used with the KEL-SNAP frame, mounting without tools possible
- Maintain manufacturer´s warranty on pre-terminated cables
- Retrofittings, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Can be combined with IMAS-CONNECT grommets

Specifications

Material	Polyamide (PA)
Flame class	UL94-V0, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets
Operating Temperature	- 40°C to + 140°C (static) - 40°F to + 284°F (static
Properties	Halogen-free, silicone-free
Frame depth	17 mm

Accessories

QT Cable grommets	118 - 122
KEL-SNAP Mounting frames	54 - 55
KEL-EMC Grounding mounts	276 - 262
KDR-ESR Base plates	316 - 323
FP Flange plates	332 - 341
MP Module plates	326 - 327
ST Plugs	87

Cover lid is simply snapped onto the frame.

Tool-less mounting with KEL-SNAP frame.

KEL-QUICK-E

Split grommets

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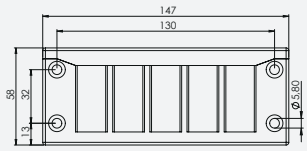
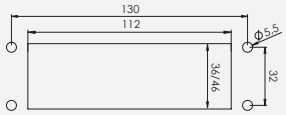
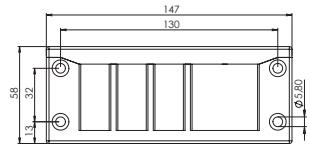
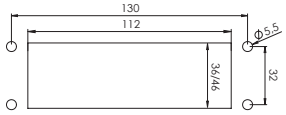
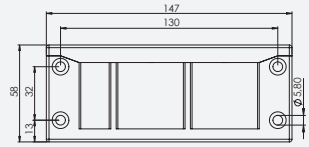
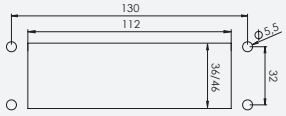
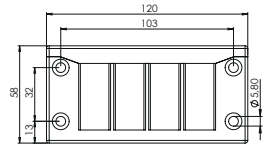
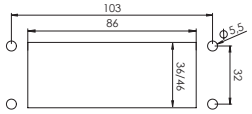
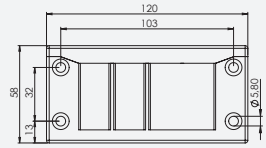
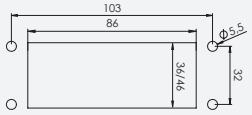
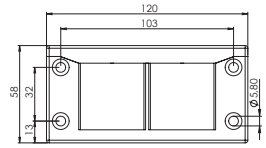
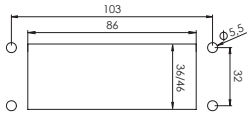
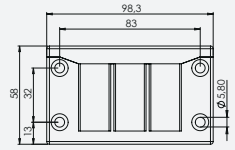
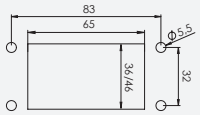
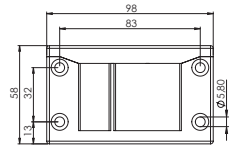
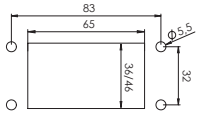
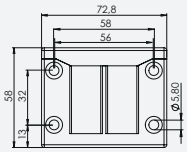
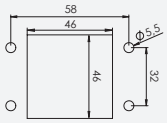
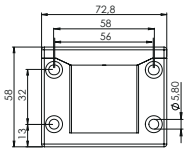
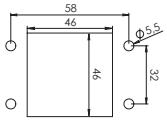
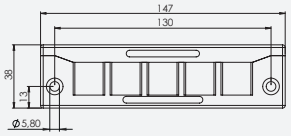
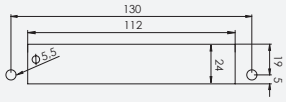
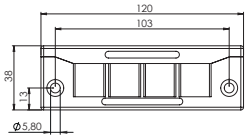
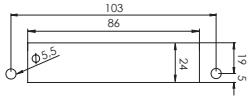
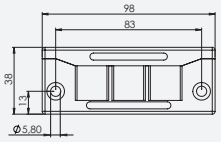
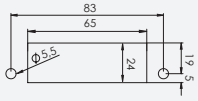
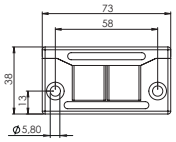
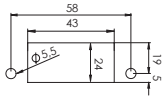
KEL-QUICK

Cable Entry Frames for Quick Assembly KEL-QUICK 24, KEL-QUICK 16, KEL-QUICK 10

Description	Cut-out | Drilling template	Type	Order No.	Cut-out [mm]	Grommets	PU
		KEL-QUICK 24|10	42410	36 × 112 / 1.378 x 4.409 "	10|–	10
		KEL-QUICK 24|7	42412	36 × 112 / 1.378 x 4.409 "	6|1	10
		KEL-QUICK 24|4	42413	36 × 112 / 1.378 x 4.409 "	2|2	10
		KEL-QUICK 16|8	42418	36 × 86 / 1.378 x 3.386 "	8|–	10
		KEL-QUICK 16|5	42425	36 × 86 / 1.378 x 3.386 "	4|1	10
		KEL-QUICK 16|2	42426	36 × 86 / 1.378 x 3.386 "	0|2	10
		KEL-QUICK 10|6	42420	36 × 65 / 1.378 x 2.56 "	6|–	10
		KEL-QUICK 10|3	42427	36 × 65 / 1.378 x 2.56 "	2|1	10

KEL-QUICK
Cable Entry Frames for Quick Assembly
KEL-QUICK-E

Description	Cut-out | Drilling template	Type	Order No.	Cut-out [mm]	Grommets	PU
		KEL-QUICK-B4	42434	46 × 46 / 1.81 x 1.81 "	4|–	10
		KEL-QUICK-B1	42435	46 × 46 / 1.81 x 1.81 "	– | 1	10
		KEL-QUICK-E5	42424	24 × 112 / 0.945 x 4.409 "	5 QT	10
		KEL-QUICK-E4	42423	24 × 86 / 0.945 x 3.386"	4 QT	10
		KEL-QUICK-E3	42422	24 × 65 / 0.945 x 2.56"	3 QT	10
		KEL-QUICK-E2	42421	24 × 43 / 0.945 x 1.693 "	2 QT	10

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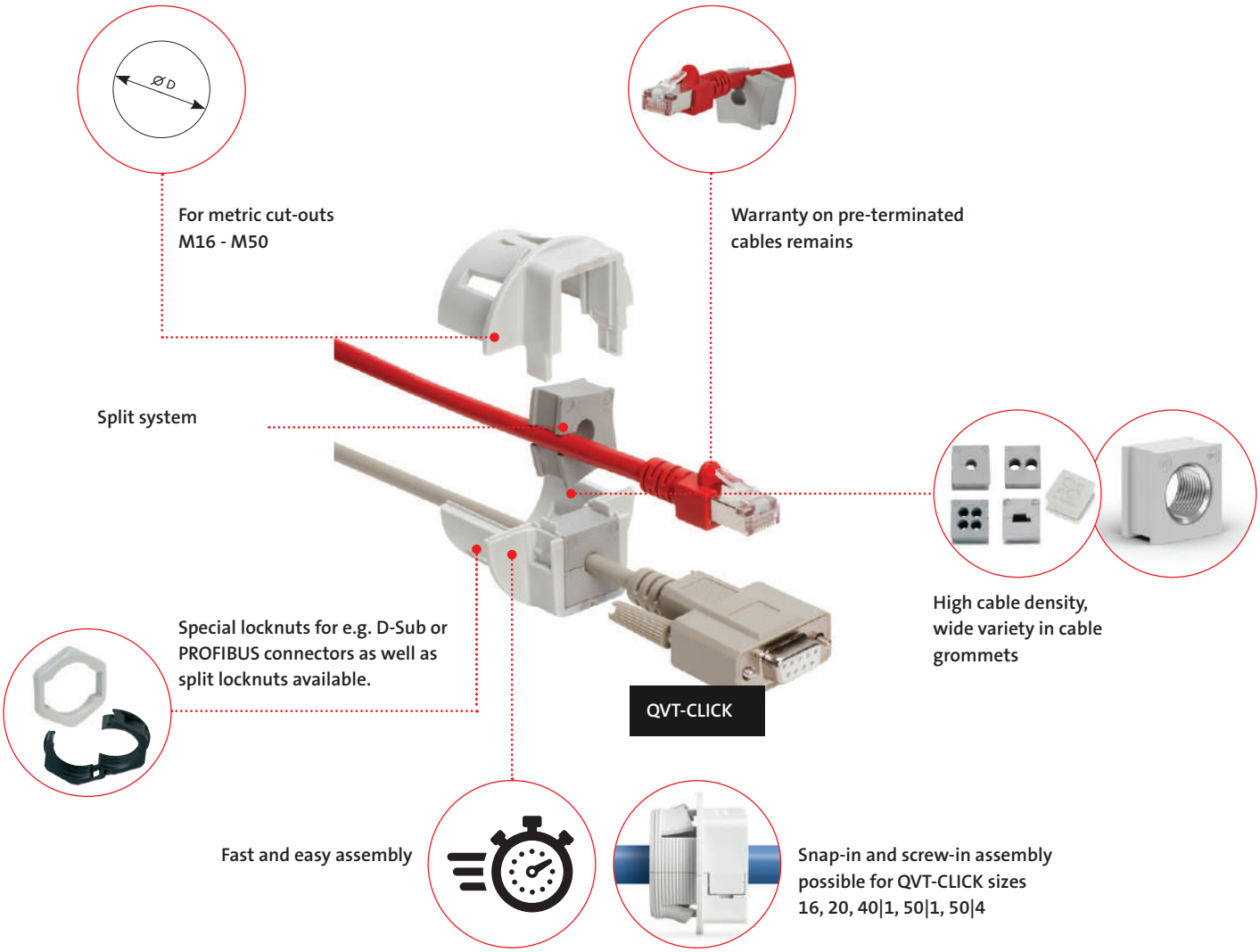
1.22 Split Cable Glands
for the QT Grommet System

By using split QVT cable glands by icotek cables with or without connectors or complete cable harnesses with diameters from 1 to 15 mm can be quickly routed into enclosures, cabinets or machines and be sealed with IP54 rated ingress protection.

The split system of the QVT cable glands enables quick and easy assembly which is great for retrofitting and maintenance. The cable is placed into the split grommet which is set into one of the gland halves. Depending on the size of the cable gland one, two or four separate grommets can be installed. The two gland halves can be easily snapped together without the need of tools. The routed lines are securely sealed and held inside the grommets. To mount the cable glands either snap it into the round metric standard cut-out (sizes available from M16 to M50) or screw it with a hexagonal locknut. The mounting method is dependent on the model type.



QVT | QVT-CLICK
Split Cable Glands for Snap-In or Screw-In Assembly with IP54 Rating

QVT and QVT-CLICK are circular split frames for quick and easy installation of pre-terminated cables or complete cable harnesses. But also electric, pneumatic or hydraulic lines without terminals or connectors as well as corrugated conduits can be easily routed and sealed with IP54. Because of its extremely compact design, the QVT/QVT-CLICK range is especially suitable for small machines, devices and instruments.

The cable glands are easy to install. The prefabricated cable is placed into the split grommet which is set into one of the gland halves. Depending on the size of the cable gland, one, two or four separate grommets can be installed. By using multi-hole grommets up to 16 lines can be routed with one cable gland.

The QVT-CLICK can be assembled without tools from the front of the enclosure wall. Sizes QVT-CLICK 16, QVT-CLICK 20, QVT-CLICK 40|1, QVT-CLICK 50|1 and QVT-CLICK 50|4 can also be screwed on with a lock nut.

QVT: Polyamide locknuts as well as a sealing ring are included in the shipment. QVT-CLICK: A sealing ring is included in the shipment.

Advantages & Benefits QVT

- Compact design
- Routing of pre-terminated cables
- Maintain manufacturer's warranty on pre-terminated cables
- Retrofittings, repairs and maintenance can be done much more easily and quickly
- Suitable for metric hole sizes
- Lock nut is included
- Can be combined with IMAS-CONNECT system

Advantages & Benefits QVT-CLICK

- Fast and easy mounting from the front
- Snap in assembly QVT-CLICK 16/20 for wall thickness 1.5 – 2.5 mm
- Snap in assembly QVT-CLICK 25/32/40/50 for wall thickness 1 – 2.5 mm
- Screw in assembly possible for QVT-CLICK sizes 40|1, 50|1 and 50|2 for a wall thickness of 11 mm (depending on the height of the locknut), for QVT-CLICK sizes 16 and 20 for a wall thickness up to 5 mm
- Snap-in and screw-in assembly possible for QVT-CLICK sizes 16, 20, 40|1, and for 50|1 and 50|4.

Specifications

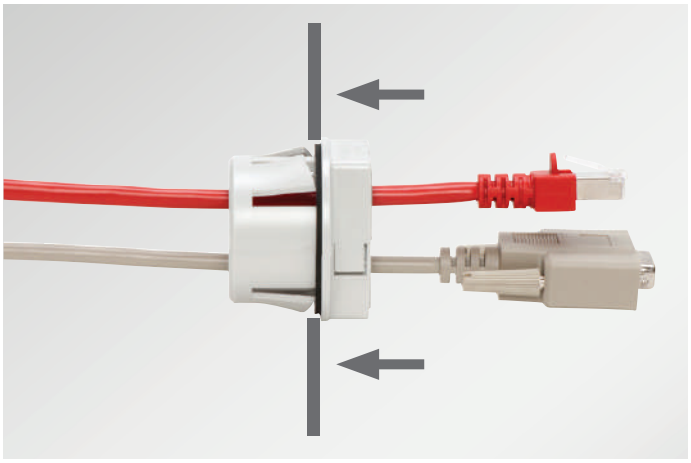
Material	Polycarbonate (PC)
Color	gray (similar RAL 7035)
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54, with gasket and correct selection of the cable grommets
Temperature	- 30°C to + 100°C (static), -22°F to + 212°F (static)
Properties	Halogen-free, silicone-free
Cut-out dimension	Metric sizes

Accessories

KGM lock nuts	358

QVT

QVT-CLICK



QVT-CLICK: Fast and easy mounting from the front

QVT – reverse view

QVT-CLICK: for screw-in or snap-in assembly

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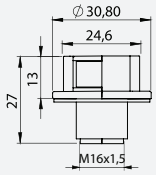
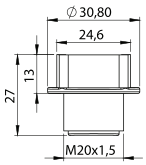
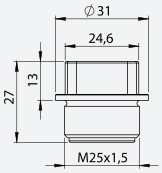
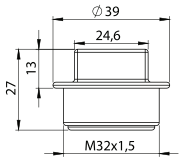
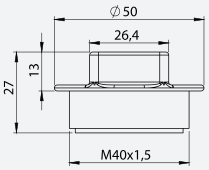
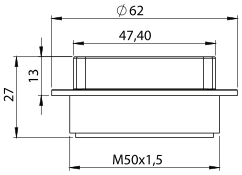
QVT
Split Cable Glands

IP54 | HL3 EN 45545-2 | EN ISO 14644 | PNEUMATICS | ECOLAB certified | RoHS compliant | Made in Germany

Description	Type	Order No.	Cable Grommets	Thread Thread length	PU
	QVT 16* ♦	45692	1 × QT	M16 × 1.5 Length: 13 mm / 0.512 "	10
	QVT 20**	45695	1 × QT	M20 × 1.5 Length: 13 mm / 0.512 "	10
	QVT 25	45702	1 × QT	M25 × 1.5 Length: 13 mm / 0.512 "	10
	QVT 32	45711	1 × QT	M32 × 1.5 Length: 13 mm / 0.512 "	10
	QVT 40|2	45715	2 × QT	M40 × 1.5 Length: 13 mm / 0.512 "	10
	QVT 50|4	45722	4 × QT	M50 × 1.5 Length: 13 mm / 0.512 "	10

* Max. cable diameter of 10 mm / 0.394 " | ** Max. cable diameter of 11 mm

♦ Cannot be combined with QT-AT-K-M

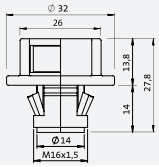
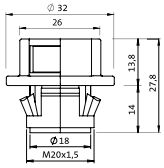
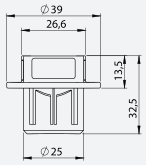
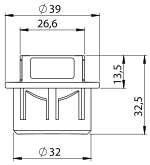
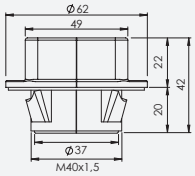
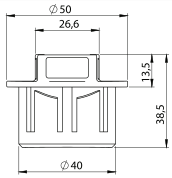
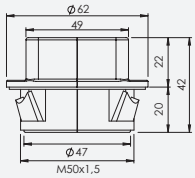
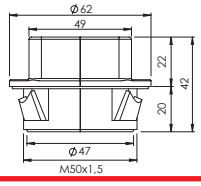
Accessories

QT Cable Grommets	118 - 120
KVT-EMC Brackets	263
KGM Locknuts	346
ST Plugs	85

Type GMT: Split locknut, p. 346

QVT-CLICK
Split Pluggable Cable Glands

IP54 | HL3 EN 45545-2 | EN ISO 14644 | PNEUMATICS | ECOLAB certified | RoHS compliant | Made in Germany

Description	Type	Order No.	Cable Grommets small | large	Cut-out* diameter	Thread Thread length	PU
	QVT-CLICK 16 **♣°	45726	1 | –	16.2 mm	M16 × 1.5 Length: 13 mm/0.512"	10
	QVT-CLICK 20 **♣°°♦	45728	1 | –	20.4 mm	M20 × 1.5 Length: 13 mm/0.512"	10
	QVT-CLICK 25	45730	1 | –	25.5 mm	–	10
	QVT-CLICK 32	45732	1 | –	32.5 mm	–	10
	QVT-CLICK 40|1 **	45736	– | 1	40.5 mm	M40 × 1.5 Length: 19 mm/0.748"	10
	QVT-CLICK 40|2	45734	2 | –	40.5 mm	–	10
	QVT-CLICK 50|1 **	45738	– | 1	50.5 mm	M50 × 1.5 Length: 19 mm/0.748"	10
	QVT-CLICK 50|4 **	45740	4 | –	50.5 mm	M50 × 1.5 Length: 19 mm/0.748"	10

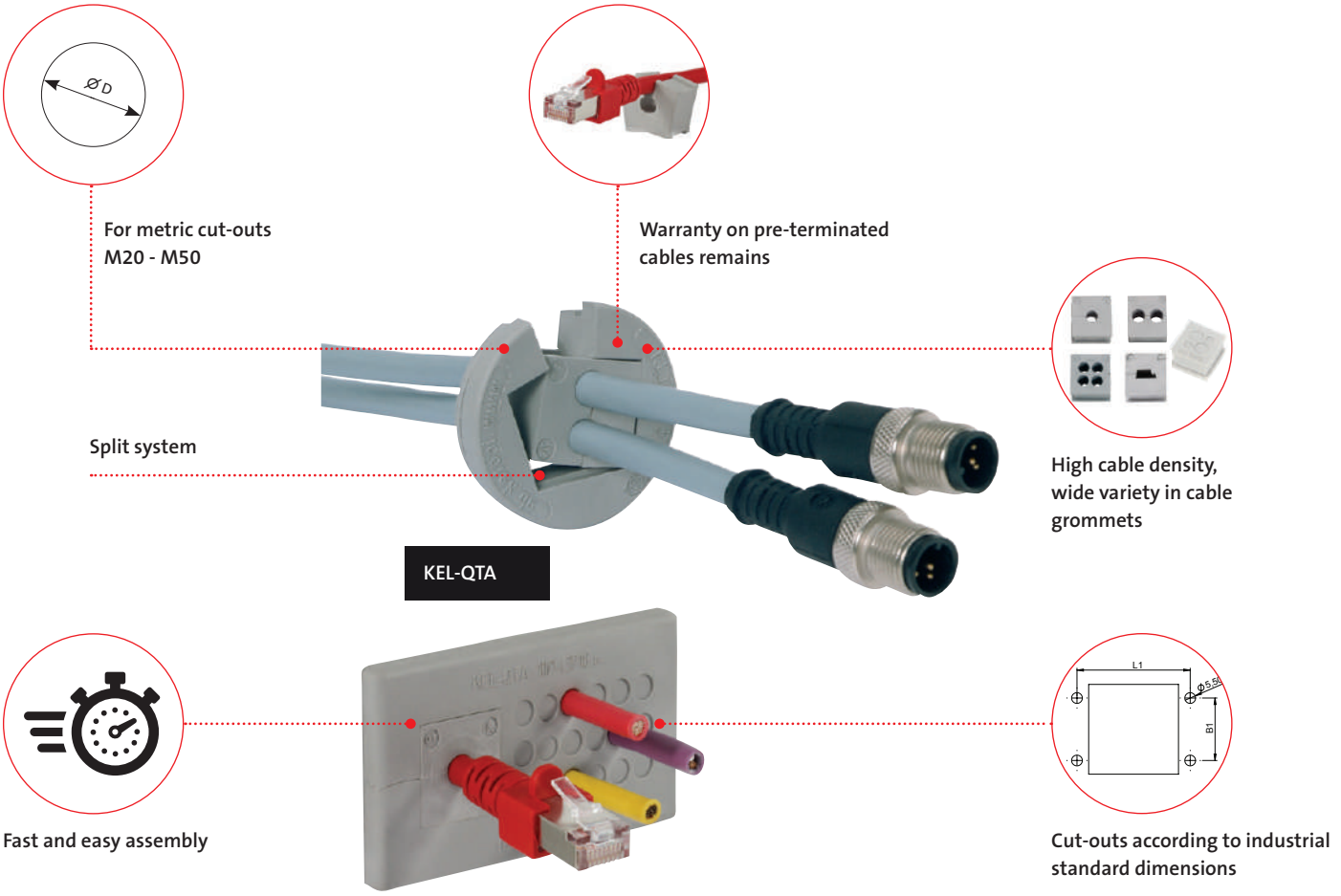
* Please consider any paint layers or powder coatings!
** Pluggable and screwable; locknut is not included in the shipment
♣ Sizes M16 und M20 for wall thickness up to 5 mm (screw-in assembly)
° Max. cable diameter of 10 mm
°° Max. cable diameter of 11 mm
♦ Cannot be combined with QT-AT-K-M

1.23 Split Cable Entry Plates
for the QT Grommet System

KEL-QTA are push-in, split IP54 cable entry plates for wall thicknesses from 1.5 to 4 mm. icotek offers several versions for rectangular standard cut-outs as well as for round metric cut-outs. The QTA system offers a large size variety.

KEL-QTA enable cable routing with or without preassembled connectors. Some types offer a combination of membranes for cable pass-through and the QT grommet system.

Split cable grommets of the QT series are used for the routing of pre-terminated cables with diameters of 1–15 mm within the KEL-QTA. In addition, there are multi-hole grommets for up to 4 lines per slot and special grommets e.g. for ASI cables.



KEL-QTA | KEL-QTE

Push-In, Split Cable Entry Plates for Snap-In Assembly with IP54 Rating

Push-In, split cable entry plates (IP54) for routing pre-terminated and standard cables utilizing split QT grommets or membranes. Suitable for cut-outs for 10- and 24-pin industrial connectors. The compact size KEL-QTA-B is suitable for cut-outs 45.5 x 45.5 mm. The round versions of the KEL-QTA are suitable for cut-outs 32 / 50 mm in diameter.

The KEL-QTA/KEL-QTE easily routes pre-terminated cables, multi-conductors, hoses or conduits without using any tools for assembly.

The KEL-QTE fits on cut-outs of 20 mm in diameter.

Advantages & Benefits

- Fast and easy assembly without tools
- High cable density by using multi-position grommets
- Simple assembly and disassembly in case of change or service
- Routing of cables with and without connectors in a high density
- Suitable for standard industrial connector cut-outs

Specifications

Material	Elastomer
Flame class	UL94-V0, self-extinguishing
IP rating	IP54, with correct selection of the cable grommets
Temperature	- 40°C to + 100°C (static)/ - 40°F to + 248°F (static)
Properties	Halogen-free, silicone-free
Cut-out dimension	Metric sizes (QTE)
Frame depth	5 mm (QTA)
Type A:	For wall thickness 1.5 - 2.5 mm/0.059 - 0.098"
Type B:	For wall thickness 2.8 - 4 mm/0.11 - 0.157"

Accessories

QT Cable grommets	118 - 122
ST-B Plugs	177
FP Flange plates	332 - 341

KEL-QTA

KEL-QTE

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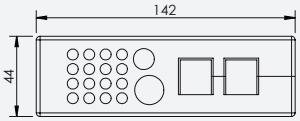
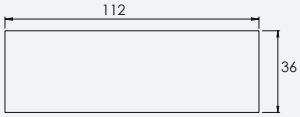
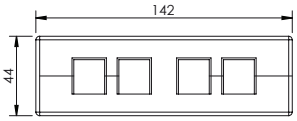
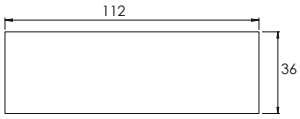
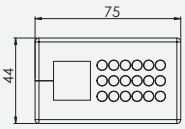
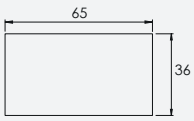
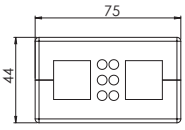
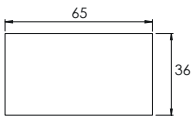
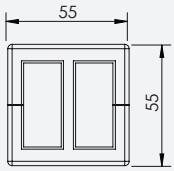
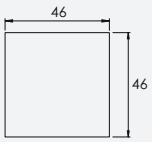
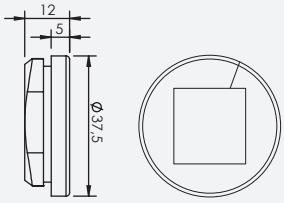
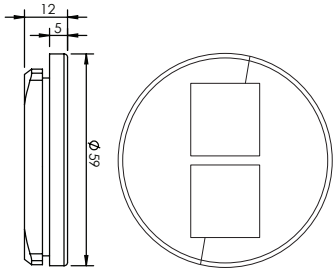
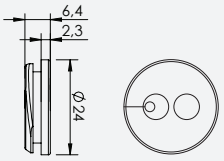
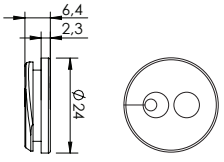
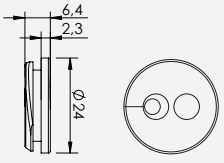
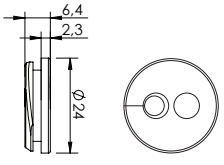
KEL-QTA
Split Cable Entry Plates

Description	Cut-out | Drilling template	Type	Order No. Type A	Order No. Type B	Cut-out [mm]	Cables	PU
		KEL-QTA 24|2 -DP 18	43642	43643	112 × 36 / 4.409 x 1.378 "	pre-terminated 2× 1 - 15 mm / 0.039 - 0.591 " without connector 16× max. 7 mm / 0.276 " 1× max. 12 mm / 0.472 " 1× max. 16 mm / 0.63 "	10
		KEL-QTA 24|4	43644	43645	112 × 36 / 4.409 x 1.378 "	pre-terminated 4× 1 - 15 mm / 0.039 - 0.591 "	10
		KEL-QTA 10|1-DP 18	43655	43658	65 × 36 / 2.56 x 1.378 "	pre-terminated 1× 1 - 15 mm / 0.039 - 0.591 " without connector 18× max. 5 mm / 0.197 "	10
		KEL-QTA 10|2-DP 6	43656	43659	65 × 36 / 2.56 x 1.378 "	pre-terminated 2× 1 - 15 mm / 0.039 - 0.591 " without connector 6× max. 5 mm / 0.197 "	10
		KEL-QTA-B4	43660	-	46 × 46 / 1.811 x 1.811 "	pre-terminated 4× 1 - 15 mm / 0.039 - 0.591 "	10

KEL-QTA | KEL-QTE
Split Cable Entry Plates

Description	Type	Order No. Type A	Order No. Type B	Cut-out [mm]	Cables		PU
					pre-terminated	non-pre-term.	
	KEL-QTA 32	43632	43636	ø 32	1× 1 - 15 mm / 0.039 - 0.591 "	-	10
	KEL-QTA 50	43622	43626	ø 50	2× 1 - 15 mm / 0.039 - 0.591 "	-	10
	KEL-QTE 20|2.5	43412	-	ø 20	1× 2.6 - 3.2 mm / 0.102 - 0.126 "	1× max. 5.2 mm /	10
	KEL-QTE 20|3	43413	-	ø 20	1× 3.1 - 3.8 mm / 0.122 - 0.15 "	1× max. 5.2 mm / 0.205 "	10
	KEL-QTE 20|4	43414	-	ø 20	1× 3.8 - 4.8 mm / 0.15 - 0.189 "	1× max. 5.2 mm / 0.205 "	10
	KEL-QTE 20|5	43415	-	ø 20	1× 4.7 - 5.6 mm / 0.185 - 0.22 "	1× max. 5.2 mm / 0.205 "	10

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1.24 Cable Grommets
for the QT System

Cable grommets QT are used with the following cable entry components:

- KEL-QUICK
- QVT
- QVT-CLICK
- KEL-QTA

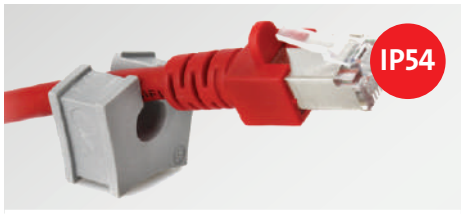
In principle, there are two types of cable grommets: split and non-split grommets. The split grommets are suitable for routing cables with connectors, the non-split ones are used for routing non-terminated cables.

Electrical, pneumatic or hydraulic lines as well as corrugated conduits and hoses can be easily routed, sealed and strain relieved using split cable entry systems.

With the split QT grommets, cable diameters from 1 to 29 mm can be covered. With correct assembly, a protection class of IP54 is achieved.

The QTMB grommets allow the routing of cables with diameters that can vary up to 3 mm. By using the QT-DT grommet, the packing density of the cables can be considerably increased and the required installation space considerably reduced.

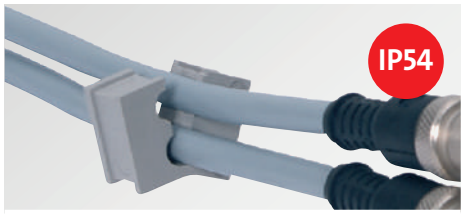
Split Cable Grommets for Cables with Connectors



Split cable grommets, single
IP54 protection
for cable diameters 1 to 15 mm

QT

120



Split cable grommets, multi and special
IP54 protection
for cable diameters 3 to 7 mm

QT multi

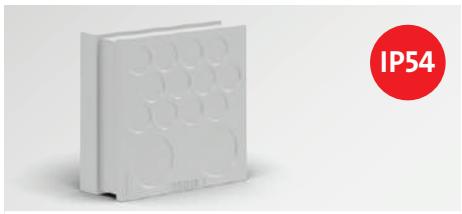
120

Split multi-range cable grommets
IP54 protection
for cable diameters 14 to 29 mm

QTMB

121

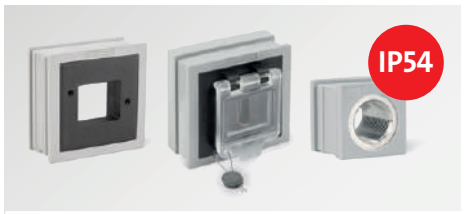
Non-Split Cable Grommets for Cables without Connectors, QT Servicebox



Membrane cable grommets
IP54 protection, high cable density
for cable diameters 6.5 to 14.5 mm

QT-DT

122



IMAS-CONNECT™
Modular adapter system
for the QT system

92 – 103

QT Servicebox
Service box for cable grommets

123

Overview of Cable Entry Systems and Matching Grommets

	Split cable grommets for cables with connectors			Non-split cable grommets for cables without connectors	
Product	**QT small single-hole**	**QT small multi, special**	**QTMB large multi-range**	**QT-DT small**	**QT-DT large**
KEL-QUICK	●	●	●	●	●
QVT	●	●	–	●	–
QVT-CLICK	●	●	●	●	●
KEL-QTA	●	●	–	●	–
KEL-QTE	●	●	–	●	–

QT
Split Cable Grommets, Small, Single, Multi and Special

Split cable grommets QT are used with the following cable entry components:
- KEL-QUICK
- QVT
- QVT-CLICK
- KEL-QTA

They are designed for cable diameters from 1 to 15 mm. Blank grommets can seal unused grommet spaces.

When using double or quadruple grommets the cable density of cable entry frames and cable glands can be greatly increased. icotek also offers special cable grommets for e.g. ASI lines.

When installing the small grommets in multiple rows, the flat sides should be facing each other. This allows the flat sides to match up and provide a secure seal.

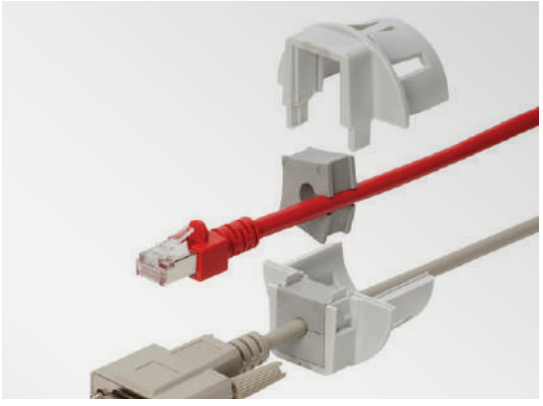
Advantages
- Routing of pre-assembled cables through cable entry frames and split cable glands
- IP54 rating
- Greatly increased cable density when using double or quadruple grommets
- Strain relief when a suitable cable entry is selected
- Available for a wide range of cable diameters

Specifications

Material	Elastomer
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54
Temperature	-40°C to +100°C (static)
Properties	Halogen-free, silicone-free

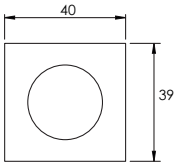
Accessories

ST Plugs	87



Description		Type	Order No.	Compatible plugs	Clamping range	PU
		QT 1	42501	ST 1	1 - 2 mm / 0.039 - 0.079"	10
		QT 2	42502	ST 2	2 - 3 mm / 0.079 - 0.118"	10
		QT 3	42503	ST 3	3 - 4 mm / 0.118 - 0.157"	10
		QT 4	42504	ST 4	4 - 5 mm / 0.157 - 0.197"	10
		QT 5	42505	ST 5	5 - 6 mm / 0.197 - 0.236"	10
		QT 6	42506	ST 6	6 - 7 mm / 0.236 - 0.276"	10
		QT 7	42507	ST 7	7 - 8 mm / 0.276 - 0.315"	10
		QT 8	42508	ST 8	8 - 9 mm / 0.315 - 0.354"	10
		QT 9	42509	ST 9	9 - 10 mm / 0.354 - 0.394"	10
		QT 10	42510	ST 10	10 - 11 mm / 0.394 - 0.433"	10
		QT 11	42511	ST 11	11 - 12 mm / 0.433 - 0.472"	10
		QT 12	42512	ST 12	12 - 13 mm / 0.472 - 0.512"	10
		QT 13	42513	ST 13	13 - 14 mm / 0.512 - 0.551"	10
		QT 14	42514	ST 14	14 - 15 mm / 0.551 - 0.591"	10
		QTB	42540	–	Blank grommet	10
	QT 2|x	QT 2|3	42566	ST 3	2× ø 3 mm/ 0.118 "	10
		QT 2|4	42568	ST 4	2× ø 4 mm / 0.157 "	10
		QT 2|5	42570	ST 5	2× ø 5 mm / 0.197 "	10
		QT 2|5.5	42571	–	2× ø 5.5 mm / 0.217 "	10
		QT 2|6	42572	ST 6	2× ø 6 mm / 0.236 "	10
		QT 2|6.5	42576	–	2× ø 6.5 mm / 0.256 "	10
		QT 2|7	42578	ST 7	2× ø 7 mm / 0.276 "	10
	QT 4|x	QT 4|3	42580	ST 3	4× ø 3 mm / 0.118 "	10
		QT 4|4	42582	ST 4	4× ø 4 mm / 0.157 "	10
		QT 4|4.5	42583	ST 4.5	4× ø 4.5 mm / 0.177	10
		QT 4|5	42584	ST 5	4× ø 5 mm / 0.197 "	10
		QT 4|5.5	42585	–	4× ø 5.5 mm / 0.217 "	10
		QT 4|6	42586	ST 6	4× ø 6 mm / 0.236 "	10
		QT-ASI 1	42573	ST ASI	1× ASI-cable	10
		QT-ASI 2	42574	ST ASI	2× ASI-cable	10
		QT tele	42575	–	Telephone cable	10

QTMB
Split Multi-Range Grommets, Large, for QUICK Systems



The multi-range grommet QTMB is used to route pre-terminated cables into the KEL-QUICK system.

The innovative membrane enables the routing of cables with diameters that can vary up to 3 mm.

The QTMB can also be used to insert large cables with a clamping range of 14 to 29 mm.

Advantages

- Routing of cables with and without connectors
- IP54 rating
- Strain relief when a suitable cable entry is selected
- Large clamping range
- Only 7 grommets cover a clamping range from 14 to 29 mm
- Innovative wave cut for a better sealing
- Innovative membrane for high flexibility

Specifications

Material	Elastomer
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54
Temperature	-40°C to +100°C (static)
Properties	Halogen-free, silicone-free

Accessories

ST-B Plugs	177

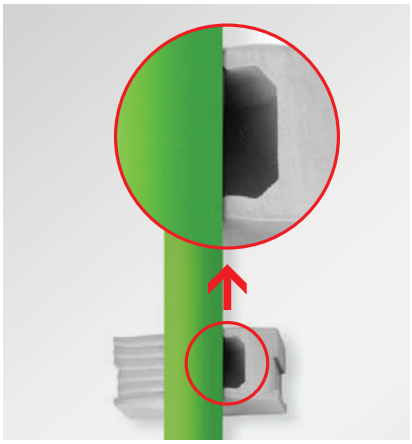
Description	Type	Compatible plugs	Order No.	Clamping range	PU
	QTMB 14–17	ST-B 16	42515	14–17 mm 0.551 – 0.669"	10
	QTMB 16–19	ST-B 18	42516	16–19 mm 0.630 – 0.748"	10
	QTMB 18–21	ST-B 20	42517	18–21 mm 0.709 – 0.827"	10
	QTMB 20–23	ST-B 22	42518	20–23 mm 0.787 – 0.906"	10
	QTMB 22–25	ST-B 24	42519	22–25 mm 0.866 – 0.984"	10
	QTMB 24–27	ST-B 26	42520	24–27 mm 0.945 – 1.062"	10
	QTMB 26–29	ST-B 28	42521	26–29 mm 1.024 – 1.142"	10
	QTBG	–	42545	Blank grommet	10

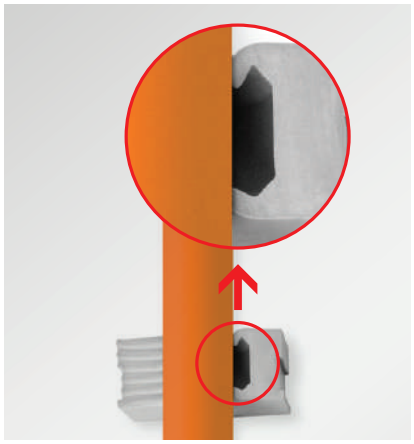
ST-B plugs for the sealing of the perforated membrane

ø 14 – 17 mm

ø 20 – 23 mm

ø 26 – 29 mm





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QT-DT

Membrane Cable Grommets, Non-Split, for QUICK System

The QT-DT membrane cable grommet enables the routing of cables without connectors. Using the QT-DT grommet considerably increases the cable packing density and decreases the space needed. This new grommet can be used in the KEL-QUICK cable entry frames as well as in the KEL-QTA cable entry plates. Therefore, it is possible to insert cables with and without connectors into one cable entry system.

Advantages

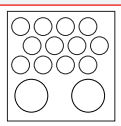
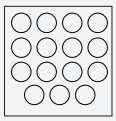
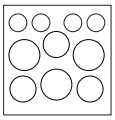
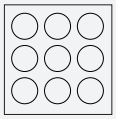
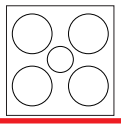
- Combination of pre-assembled and non-assembled cables in one cable entry product
- Very high packing density
- Considerable space and cost savings
- Pre-assembly of individual assemblies possible

Specifications

Material	Elastomer
Flame class	UL94-V0
IP Rating	IP54
Operating temperature	- 40°C to + 100°C (static) - 40°F to + 212°F (static)
Properties	Halogen-free, silicone-free

Accessories

ST Plugs	87

	Description	Type	Order No.	Clamping range	PU
	QT-DT small	QT-DT 1	42550	4x max. 6.5 mm	10
		QT-DT 2	42551	2x max. 3.5 mm 2x max. 6.5 mm	10
		QT-DT 3	42552	9x max. 3.5 mm	10
	QT-DT large	QT-DT 8	42556	12x max. 6.5 mm 2x max. 12.2 mm	10
		QT-DT 9	42557	15x max. 7.1 mm	10
		QT-DT 10	42558	4x max. 6.5 mm 3x max. 9.5 mm 3x max. 11.3 mm	10
		QT-DT 11	42559	9x max. 9.5 mm	10
		QT-DT 12	42560	4x max. 14.5 mm 1x max. 9.5 mm	10

QT ServiceBox
Service Box
for Cable Grommets

Convenient—everything available right away!

The QT ServiceBox is perfect for installations and service calls. It ensures your QT grommets are readily available.

Content*

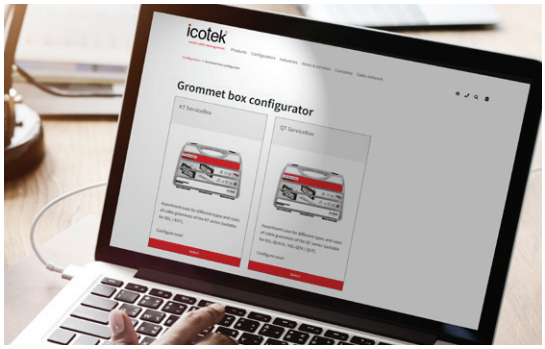
Cable grommets
- 210 QT for cables 1 – 15 mm / 0.039 - 0.591 "
- 10 QTB blank grommets
- 1 QT-DT 1
- 1 QT-DT 2
- 1 QT-DT 3

Cable entry components
- 5 KEL-QTA 50 A cable entry plates
- 1 KEL-QTA 32 A cable entry plate
- 1 KEL-QTA 24|2-DP 18 A cable entry plate
- 1 KEL-QTA 10|1-DP 18 A cable entry plate
- 1 KEL-QUICK 24|10 cable entry frame
- 3 QVT 25 split cable gland
- 3 QVT-CLICK 32 split cable gland

Accessories:
- 1 Cable template

* Subject to alterations

Description	Order No.	PU
QT ServiceBox	88005	1



Now the assortment cases for different types and sizes of cable grommets can be configured individually. So the perfect grommets are always at hand: www.icotek.com/en-us/config/626044

KMS
Cable Template

The correct size of the KT grommets can easily be determined by using the cable template.
- Determining the diameter of the cable using the cable template
- Selecting the KT grommets according to the data on the cable template

Cable templates can also be ordered separately.

Description	Order No.	PU
Cable template	39800	1

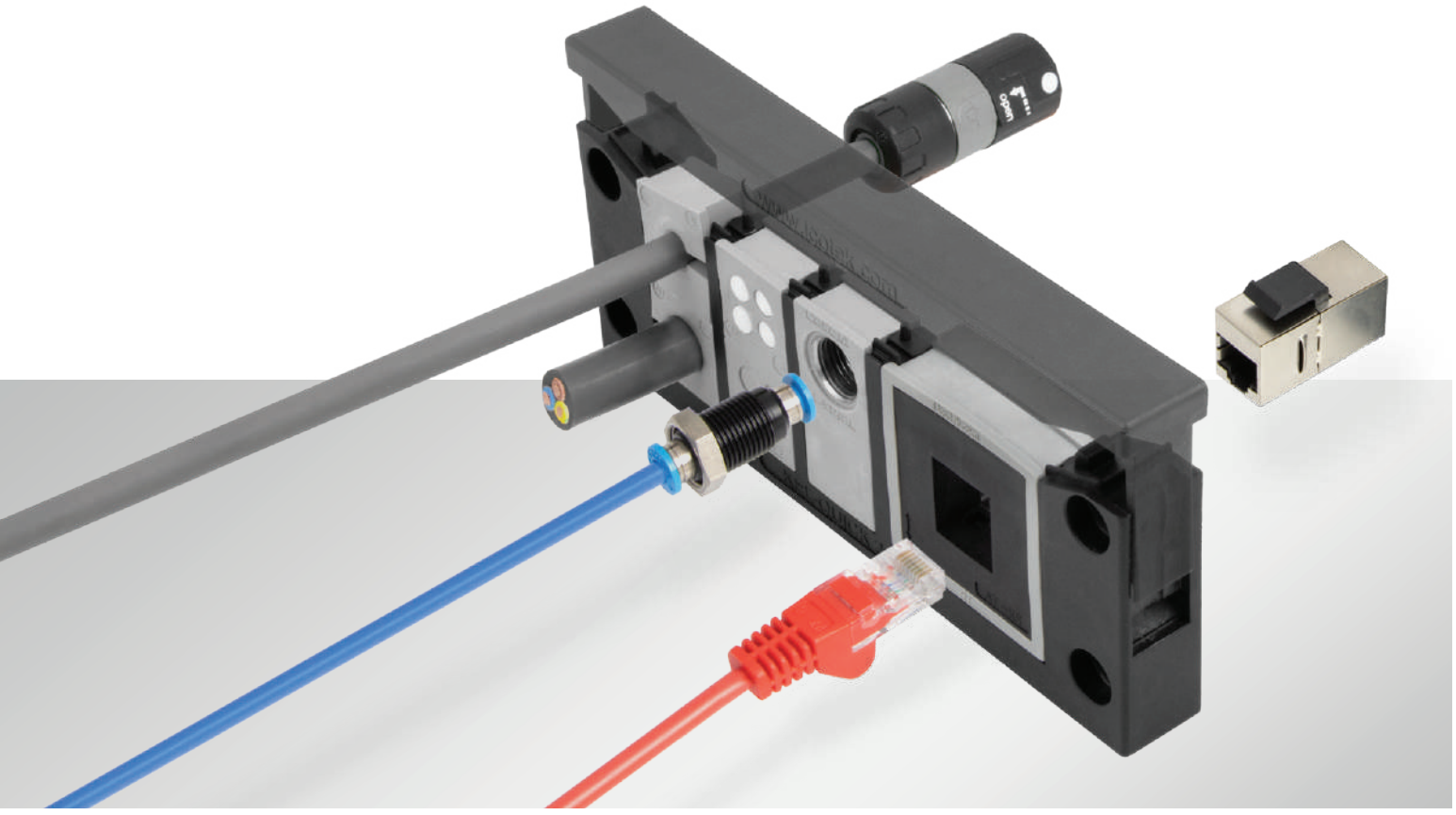
1.25 Modular Adapter System
IMAS-CONNECT™ for the QT system

Simply configure the most individual cable entry in the world

The IMAS-CONNECT™ adapter system is a modular designed grommet system for mounting metric connectors, PushPull modules, Keystone couplers, hose fittings, pressure compensation elements and much more.

By utilising the modular adapter system, the cable entry frame becomes a hybrid system. Pre-terminated and standard cables or hoses can be routed. At the same time the system serves as a unique interface for all kinds of connectors. This means that only one interface or cut-out is required for various cables and connections.

The elastomer grommets with polyamide body fit perfectly into the icotek cable entry frames e.g. KEL-U, KEL-ER, KEL-FG and comply with protection classes IP54 to IP66.



Adapter Grommet, Small
with Threaded Insert

QT-AT-K-M

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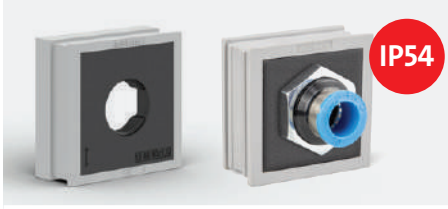
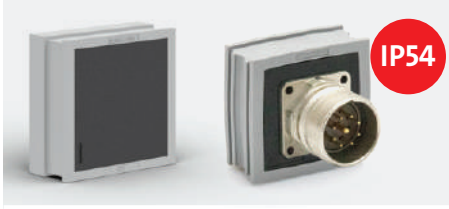


Adapter Grommet, Large
with Metric Inner Thread

QT-AT-M

127



Adapter Grommet, Blank, Large

QT-AT-B

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Adapter Grommet, Large
for M23 Square Flange

QT-AT-FL

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Adapter Grommet, Large
for PushPull Connector Systems

QT-AT-PP

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Adapter Grommet, Large
for Keystone Couplers

QT-AT-KS

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Adapter Grommet, Large
for Keystone Couplers, with Protection Cover

QT-AT-KS-AK

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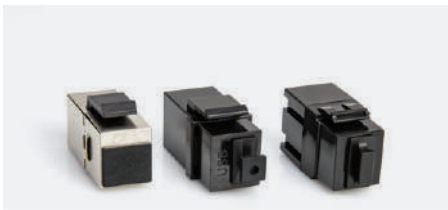
Adapter Grommet, Large
with Mounted Keystone Modules,
Product Set

132



Keystone Modules, Single,
Bulkhead Couplings
and Accessories

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QT-AT-K-M
Adapter Grommet, Small with Thread Insert

The QT-AT-K-M grommet is constructed on the basis of a QT cable grommet. The grommets are made of elastomer with a nickel-plated brass body. The QT-AT-K-M grommets are available with inner threads in sizes M5 x 0.5, M8 x 0.5, M8 x 1.0, M12 x 1.0, M12 x 1.5.

By using the QT-AT-K-M adapter grommet, several connectors can be inserted directly into the cable entry frame, e.g. pneumatic bulkhead connectors M12 x 1.0 and M14 x 1.0, metric connectors and pressure compensation elements.

They are compatible with all split icotek cable entry systems that are suitable for QT cable grommets.

Advantages & Benefits

- By using QT-AT-K-M grommets, panel connectors and sockets can be integrated directly into the cable entry system
- Separate cut-outs for connectors are no longer necessary
- Space-saving solution
- Thread sizes M5 to M12 available

Specifications

Material	Grommet: Elastomer Body: nickel-plated brass
Flame class	UL 94 V-0, self-extinguishing
Protection class	IP65 when using correct components
Temperature	-40°C bis +100°C (static)
Properties	Halogen free, silicone free

Type	Order No.	Height × Width × Length	Thread	Material	PU
QT-AT-K-M 5x0.5	42604	20 x 19 x 17 mm 0.787 x 0.748 x 0.669"	M5 x 0.5	Brass/Elastomer	5
QT-AT-K-M 8x0.5	42609	20 x 19 x 17 mm 0.787 x 0.748 x 0.669"	M8 x 0.5	Brass/Elastomer	5
QT-AT-K-M 8x1.0	42605	20 x 19 x 17 mm 0.787 x 0.748 x 0.669"	M8 x 1.0	Brass/Elastomer	5
QT-AT-K-M 12x1.0	42606	20 x 19 x 17 mm 0.787 x 0.748 x 0.669"	M12 x 1.0	Brass/Elastomer	5
QT-AT-K-M 12x1.5	42607	20 x 19 x 17 mm 0.787 x 0.748 x 0.669"	M12 x 1.5	Brass/Elastomer	5

QT-AT-M | QT-AT-B
Adapter Grommet, Large with Metric Inner Thread

QT-AT-M is a grommet (based on large QT grommets) with integrated metric threads, suitable for split icotek cable entry systems. The QT-AT-M grommets are made of elastomer with a polyamide body. QT-AT-M grommets are available with inner threads in sizes M12x1.0, M16x1.5, M20x1.5 and M25x1.5.

The QT-AT-M is ideal for creating an interface for signal, data, power and hybrid connectors by simply screwing them into the QT-AT-M thread. Pressure compensation elements or conduit connectors up to M25x1.5 can also be screwed into the QT-AT-M.

There is also a blank QT-AT-B grommet available. The integrated polyamide body is completely closed on one side. The effective area is 24 x 24 mm (0.94 x 0.94"), the wall thickness is 6 mm (0.24"). Custom drill-holes and cut-outs can be made here for e.g. installation of screw mounted hybrid connectors.

icotek also offers screw plugs for sizes M16, M20 and M25 to close the new adapter grommet with the metric internal thread QT-AT-M.

Advantages & Benefits

- By using QT-AT-M grommets, panel connectors and sockets can be integrated directly into the cable entry system
- Separate cut-outs are no longer necessary
- Space-saving solution
- Thread sizes M12 to M25 available

Specifications

Material	Grommet: Elastomer Body with thread: Polyamide
Flame class	UL94-V0, self-extinguishing
Protection class	IP54 when using correct components
Temperature	-40°C to +100°C (static) -40°F to +212°F (static)
Properties	Halogen free, silicone free

Type	Order No.	Height × width × length [mm]	Thread	Material	PU
QT-AT-M 12x1,0	42596	39 x 40 x 17 1.535 x 1.575 x 0.669"	M12 × 1.0	PA/Elastomer	10
QT-AT-M 16x1,5	42597	39 x 40 x 17 1.535 x 1.575 x 0.669"	M16 × 1.5	PA/Elastomer	10
QT-AT-M 20x1,5	42598	39 x 40 x 17 1.535 x 1.575 x 0.669"	M20 × 1.5	PA/Elastomer	10
QT-AT-M 25x1,5	42599	39 x 40 x 17 1.535 x 1.575 x 0.669"	M25 × 1.5	PA/Elastomer	10
QT-AT-B blank	42600	39 x 40 x 17 1.535 x 1.575 x 0.669"	–	PA/Elastomer	10

Screw plugs for QT-AT-M

Type	Order No.	Thread	Material	PU
Screw plug M16 × 1.5	99195	M16	Polyamide	10
Screw plug M20 × 1.5	99196	M20	Polyamide	10
Screw plug M25 × 1.5	99197	M25	Polyamide	10

QT-AT-FL
Adapter Grommet, Large for M23 Square Flange

Type	Order No.	Height × width × length [mm]	Material	PU
QT-AT-FL	42608	42 x 41.5 x 19 1.65 x 1.63 x 0.75"	PA/Elastomer	5

The grommet QT-AT-FL is constructed on the basis of a large QT cable grommet. The polyamide body is molded with elastomer. All square flanges with dimensions 19.8 x 19.8 mm (M23) can be integrated.

The insertion of QT-AT-FL into an icotek cable entry frame enables the routing of cables with and without connectors in combination with the creation of interfaces for M23 connectors within one cable entry system. Separate cut-outs for connectors are no longer necessary.

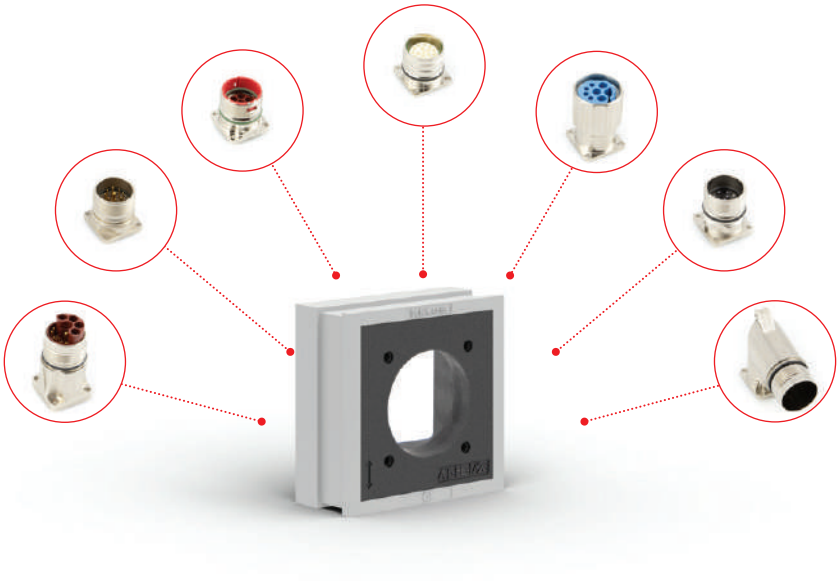
QT-AT-FL provides ingress protection of up to IP54 (depending on the used flange and connector).

Advantages & Benefits

- By using the QT-AT-FL grommet, connectors can be integrated directly into the cable entry frame
- Separate cut-outs for connectors are no longer necessary
- Space-saving solution
- Cost-saving assembly

Specifications

Material	Grommet: Elastomer Body: Polyamide
Flame class	UL 94-V0, self-extinguishing
Protection class	IP54, IP55, IP64, IP65
Temperature	-40°C to +100°C (static) -40°F to +212°F (static)
Properties	Halogen free, silicone free



QT-AT-PP
Adapter Grommet, Large for PushPull Connector Systems

The grommet QT-AT-PP is constructed on the basis of a large QT cable grommet. In this elastomer grommet, a polyamide body is integrated. All modules based on the PushPull system can be inserted into the grommet.

By using the grommet QT-AT-PP, the split cable entry frame can be used to route pre-terminated cables and at the same time it can also be used as an interface for connectors. This can save additional cut-outs and reduce labour costs.

PushPull modules and add-on housings are not included in the scope of delivery.

Type	Order No.	Height × width × length [mm]	Material	PU
QT-AT-PP	42602	39 x 40 x 17 1.535 x 1.575 x 0.669"	PA / Elastomer	10

Advantages & Benefits

- By using QT-AT-PP grommets, panel connectors and sockets can be integrated directly into the cable entry system
- Separate cut-outs for connectors are no longer necessary
- Time saving solution
- Space-saving solution
- Assembly costs are reduced

Specifications

Material	Grommet: Elastomer Body with thread: Polyamide
Flame class	UL94-V0, self-extinguishing
Protection class	IP54 when using correct components
Temperature	-40°C to +100°C (static) -40°F to +212°F (static)
Properties	Halogen free, silicone free

The module (left) snaps into the rear of the add-on housing mounted on the QT-AT-PP.

QT-AT-KS
Adapter Grommet, Large for Keystone Couplers

The grommet QT-AT-KS is constructed on the basis of a QT cable grommet. In this elastomer grommet, a polyamide body is integrated. All couplers based on the Keystone system can be simply snapped in.

By using the grommet QT-AT-KS, the split cable entry frame can be used to route pre-terminated cables and at the same time it can also be used as an interface for connectors. This can save additional cut-outs and reduce labour costs.

Advantages & Benefits

- By utilizing the QT-AT-KS grommet, connectors can be integrated directly into the cable entry frame
- Separate cut-outs for connectors are no longer necessary
- Space-saving solution
- Grommet is suitable for all Keystone couplers
- Snap-in assembly

Specifications

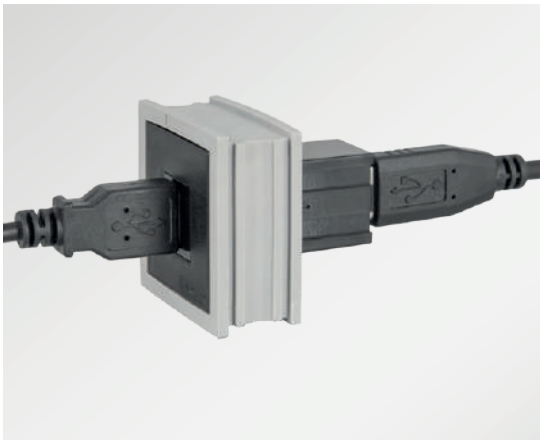
Material	Grommet: Elastomer Body: Polyamide
Flame class	UL94-V0, self-extinguishing
Protection class	IP54 depending on Keystone module and manufacturer
Temperature	-40°C to +100°C (static)
Properties	Halogen free, silicone free

Individual Keystone modules on page 133.

Type	Order No.	Height × width × length [mm]	Material	PU
QT-AT-KS	42601	39 x 40 x 17 1.535 x 1.575 x 0.669"	PA/Elastomer	10

Adapter grommet with mounted Keystone modules

Type	Order No.	Height × Width × Length [mm]	Color Keystone module	PU
QT-AT-KS-USB 3.0	42644	39 x 40 x 17	black	1
QT-AT-KS USB-C	42647	39 x 40 x 17	black	1
QT-AT-KS-HDMI	42645	39 x 40 x 17	black	1
QT-AT-KS-CAT6	42646	39 x 40 x 17	silver	1
QT-AT-KS-CAT7	42643	39 x 40 x 17	silver	1



USB-, RJ45 or e.g. HDMI connectors can be plugged in from the front and from the back.

QT-AT-KS-AK

Adapter Grommet, Large for Keystone Couplers with Protection Cover

The polyamide body integrated into the adapter grommet enables all modules based on the Keystone system to be snapped in. The interface can be closed and even sealed using a protective cover on the front.

By using the grommet QT-AT-KS-AK, the split cable entry frame can be used to route pre-terminated cables and at the same time it can also be used as an interface for connectors. This can save additional cut-outs and reduce labour costs.

QT-AT-KS-AK fulfils protection classes up to IP54 when the cover is closed (regardless of the Keystone module type and manufacturer).

Advantages

- By utilising the QT-AT-KS-AK grommet, connectors can be integrated directly into the cable entry frame
- Separate cut-outs for connectors are no longer necessary
- Space-saving solution
- Easy to install thanks to lockable cover flap
- Cover flap can be secured by sealing

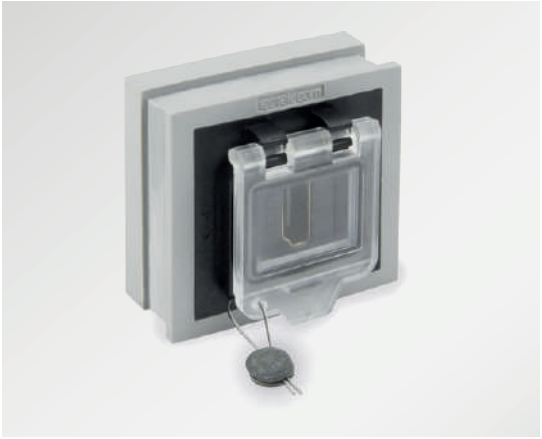
Specifications

Material	Grommet: Elastomer Body: Polyamide
Flame class	UL 94 V-0, self-extinguishing
Protection class	IP54 (certified according to EN 60529)
Temperature	-40°C to +100°C (static)
Properties	Halogen free, silicone free

Type	Order No.	Height × Width × Length [mm]	Material	PU
QT-AT-KS-AK	42611	39 x 40 x 17	PA/Elastomer/PC	10

Adapter grommet with mounted Keystone modules and protection cover

Type	Order No.	Height × Width × Length [mm]	Color	PU
QT-AT-KS-AK-USB 3.0	42648	39 x 40 x 17	black	1
QT-AT-KS-AK-HDMI	42649	39 x 40 x 17	black	1
QT-AT-KS-AK-CAT6	42650	39 x 40 x 17	silver	1
QT-AT-KS-AK-CAT7	42642	39 x 40 x 17	silver	1
QT-AT-KS-AK-USB-C	42651	39 x 40 x 17	black	1



Cover flap can be secured by sealing

Adapter Grommet
with Mounted Keystone Modules, Product Set

The adapter grommets type QT-AT-KS are also supplied as a convenient product set with pre-assembled keystone module.

Advantages & Benefits

- By utilizing the QT-AT-KS grommet, connectors can be integrated directly into the cable entry frame
- Separate cut-outs for connectors are no longer necessary
- Space-saving solution
- Keystone modules are already pre-assembled

Specifications

Material	Grommet: Elastomer Body: Polyamide
Flame class	UL 94 V-0, self-extinguishing
Protection class	IP54 depending on Keystone module and manufacturer
Temperature	-40°C to +100°C (static)
Properties	Halogen free, silicone free

Type	Order No.	Height × Width × Length [mm]	Color Keystone module	PU
QT-AT-KS-USB 3.0	42644	39 x 40 x 17	black	1
QT-AT-KS USB-C	42647	39 x 40 x 17	black	1
QT-AT-KS-HDMI	42645	39 x 40 x 17	black	1
QT-AT-KS-CAT6	42646	39 x 40 x 17	silver	1
QT-AT-KS-CAT7	42643	39 x 40 x 17	silver	1

Keystone Modules,
Single, Bulkhead Couplings and Accessories

The Keystone modules and bulkhead couplings are also available individually for use with the adapter grommets.

Advantages & Benefits

- By utilizing the adapter grommets, connectors can be integrated directly into the cable entry frame
- Separate cut-outs for connectors are no longer necessary
- Space-saving solution
- Snap-in assembly

Specifications

Material	Bulkhead coupling: Brass nickel plated
Flame class	UL 94 V-0, self-extinguishing
Protection class	IP54 depending on module type and manufacturer
Temperature	-40°C to +100°C (static)
Properties	Halogen free, silicone free

Keystone modules

Type	Order No.	Color	PU
Keystone module USB 3.0	99204	black	5
Keystone module USB-C	99212	black	5
Keystone module HDMI	99205	black	5
Keystone module CAT 6	99206	silver	5
Keystone module CAT 7	99213	silver	5

Bulkhead couplings

Type	Order No.	suitable for pneumatic hose	Thread	PU
Bulkhead coupling	99210	4 mm	M12 x 1.0	10

Dust caps

Type	Order No.	suitable for	PU
Dust caps for HDMI	99207	HDMI connectors	5
Dust caps for USB	99208	USB connectors	5
Dust caps for RJ-45	99209	RJ-45 connectors	5

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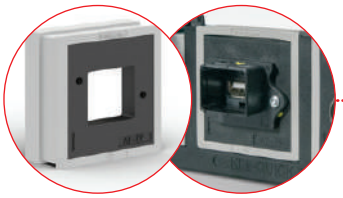
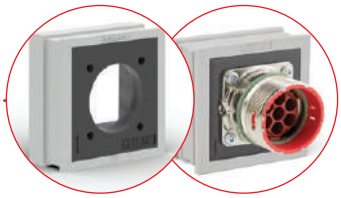


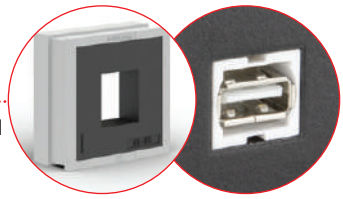
Available with pre-terminated cut-out for PushPull systems (QT-AT-PP)

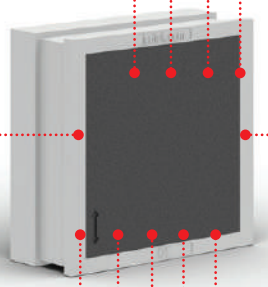
Adapter grommet for M23 square flange (QT-AT-FL)



Available with threaded insert (QT-AT-K-M), based on the QT cable grommet

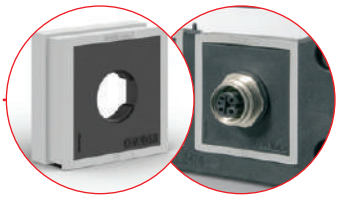
Available with pre-terminated cut-out for Keystone couplers (QT-AT-KS)





Perfect integration into the split cable entry frames

Available with metric inner threads of M12 x 1.0, M16 x 1.5, M20 x 1.5 and M25 x 1.5 (QT-AT-M)



At a high cable density only one cut-out is necessary

Usable area for special cut-outs and drill-holes:
24 x 24 mm (0.94 x 0.94");
Wall thickness: 6 mm (0.24")
(QT-AT-B)

Elastomer grommet with polyamide body based on the grommet QT large

Available with protection cover for Keystone modules (QT-AT-KS-AK)

Protection class IP54

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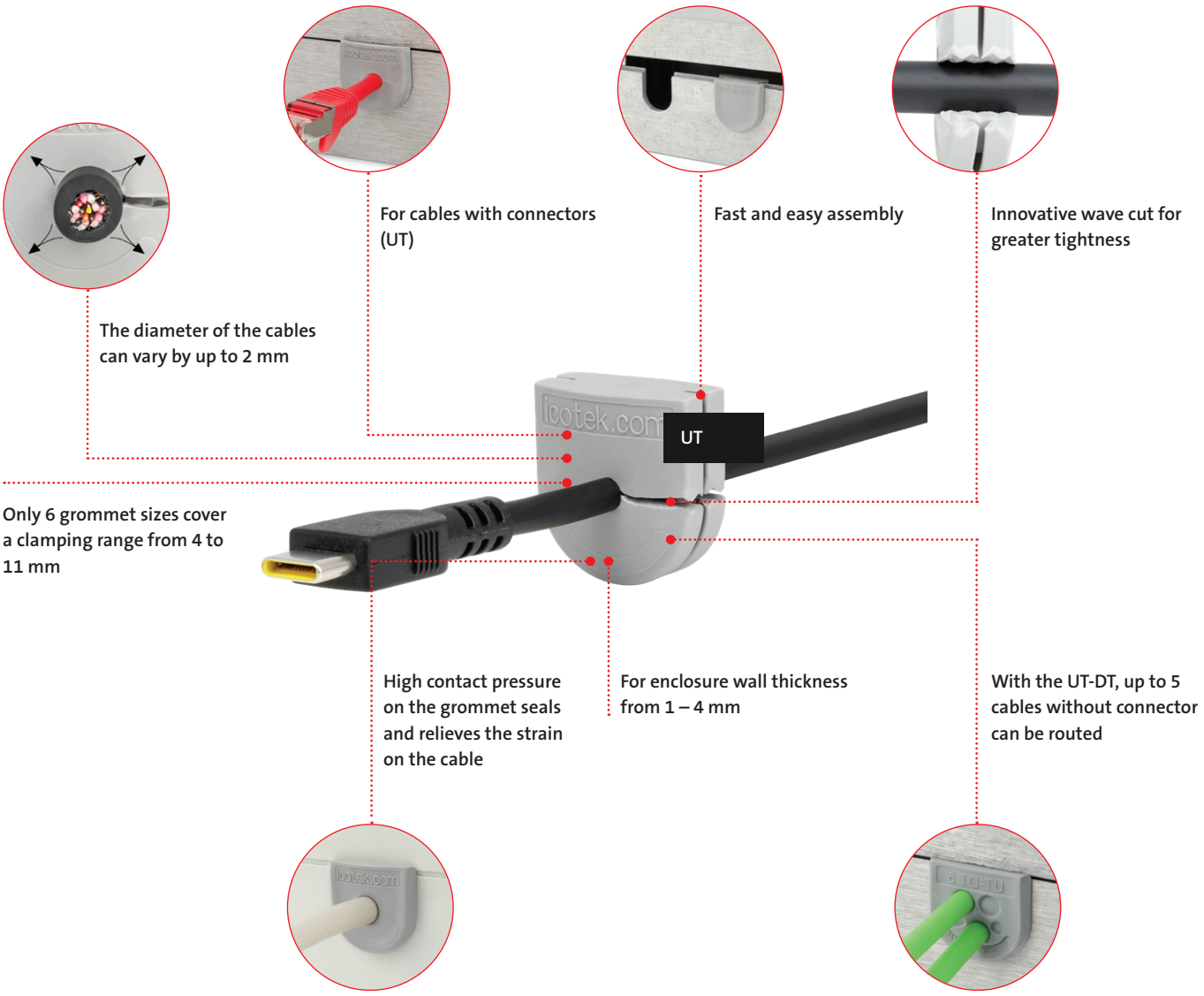
1.3 Cable Entry Systems
for Cables with and without Connectors – UT System

The universal grommet for frameless mounting is suitable for cables with and without connectors and can be used universally thanks to its variable clamping range. Depending on the housing design, a protection rating of up to IP54 is achieved.

It is used in various types of enclosures made from different materials. These include plastic, metal and die-cast aluminum enclosures.



Split Cable Grommet in U-Shape
easy, frameless assembly

UT

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Cable Grommet in U-Shape
non-split,
easy, frameless assembly

UT-DT

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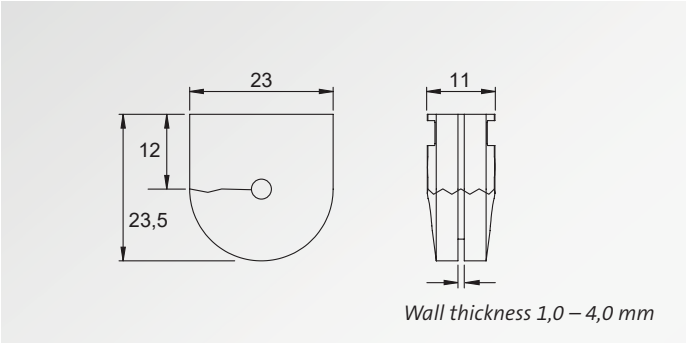
Assembly

Assembly is identical for all housing versions (with/without groove): simply make a U-shaped cut-out in the housing wall and then insert the grommet.

Caution: Enclosures behave differently due to their material properties. The contact pressure of the cover, the enclosure material and the wall thickness of the enclosure are decisive.
Recommendation: Fit the cut-out on the short side of the enclosure.



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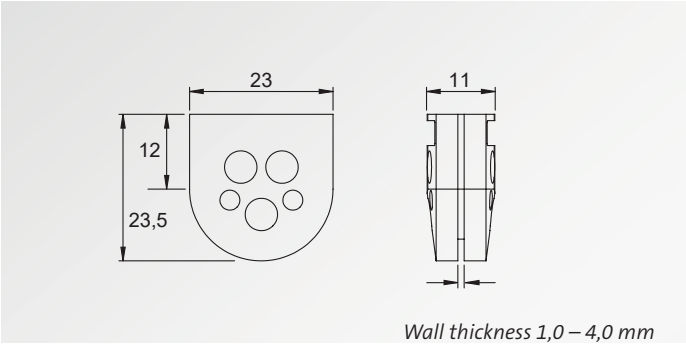
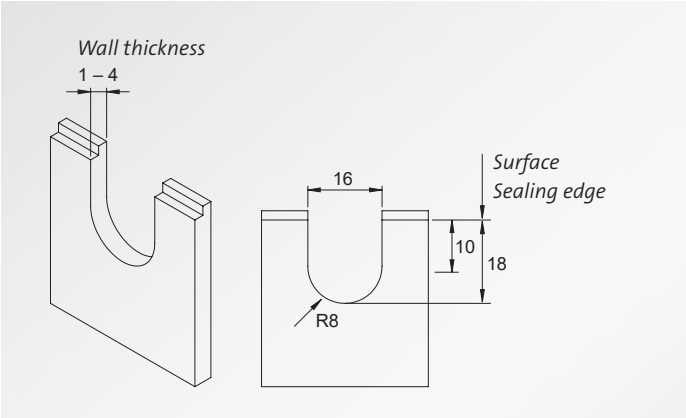
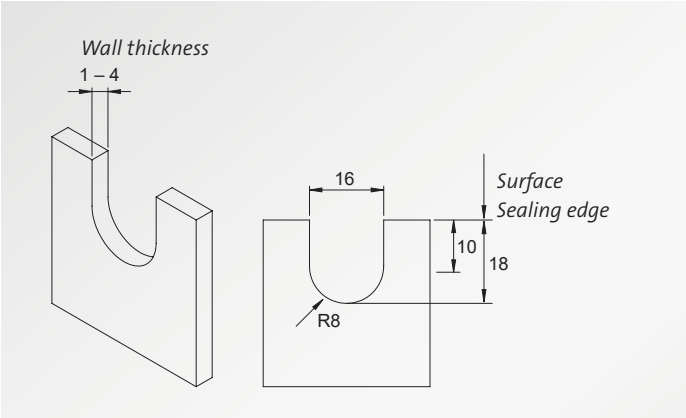


UT-DT



Cut-out with groove
Housing with tongue and groove system



Cut-out without groove
Housing without tongue and groove system

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UT
Split cable grommet in U-shape

With the UT split cable grommet, cables with and without connectors can be easily and cost-effectively inserted into an enclosure and sealed with IP54. All that is required for installation is a U-shaped cut-out into which the fitted grommet is inserted. The UT can be used universally for cables (compressed air hoses, glass fibre tubes, etc.) with a diameter of 4 to 11 mm. The wall thickness of the housing can vary from 1 to 4 mm, regardless of the material of the housing.

Once the grommet has been fitted, it is inserted into the recommended cut-out. The housing cover is then placed on the lower part of the housing. Tightening the cover applies pressure to the grommet and seals and relieves the strain on the cable.

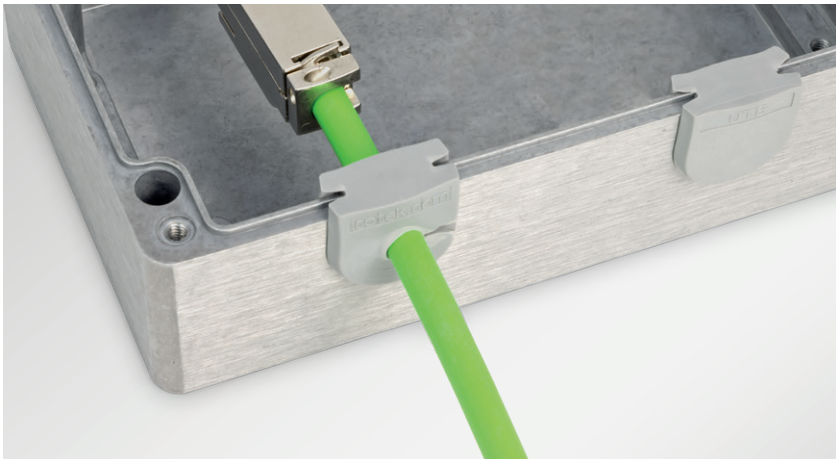
Advantages

- Only 6 grommet sizes cover a clamping range from 4 to 11 mm
- Cable diameter can vary by up to 2 mm
- Innovative wave cut for greater tightness
- For housing wall thickness from 1 – 4 mm
- Easy, tool-less installation
- Cost-effective solution

Specifications

Material	Elastomer
Color	gray (similar RAL 7035) black
IP Protection	IP54 (certified acc. to EN 60529)
Flame class	UL 94 V-0, self-extinguishing
Temperature	-40°C to +100°C (static)
Properties	Silicone free, halogen free

Type	Cable diameter	Color	Order No.	PU
UT 4-6	4 – 6 mm	gray	56001	10
UT 4-6	4 – 6 mm	black	56101	10
UT 5-7	5 – 7 mm	gray	56002	10
UT 5-7	5 – 7 mm	black	56102	10
UT 6-8	6 – 8 mm	gray	56003	10
UT 6-8	6 – 8 mm	black	56103	10
UT 7-9	7 – 9 mm	gray	56004	10
UT 7-9	7 – 9 mm	black	56104	10
UT 8-10	8 – 10 mm	gray	56005	10
UT 8-10	8 – 10 mm	black	56105	10
UT 9-11	9 – 11 mm	gray	56006	10
UT 9-11	9 – 11 mm	black	56106	10
UTB blank grommet	–	gray	56000	10
UTB blank grommet	–	black	56100	10



UT-DT
Membrane cable grommets in U-shape, non-split

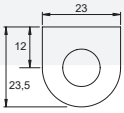
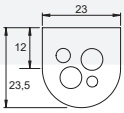
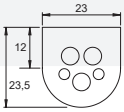
The UT-DT membrane cable grommet is used to route non-assembled cables. It can be used wherever the use of the UT cable grommets is possible. Its use allows the packing density of the routed cables to be increased. The wall thickness of the housing can range from 1.0 to 4.0 mm. It is used in various types of housings made from different materials. These include plastic, metal and die-cast aluminium housings.

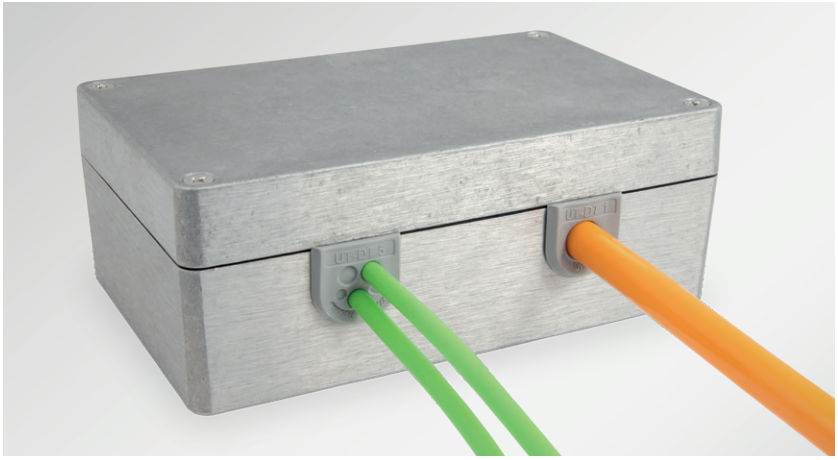
Advantages

- Up to five cables can be routed with one grommet
- For housing wall thickness from 1 – 4 mm
- Easy, tool-less installation
- Cost-effective solution

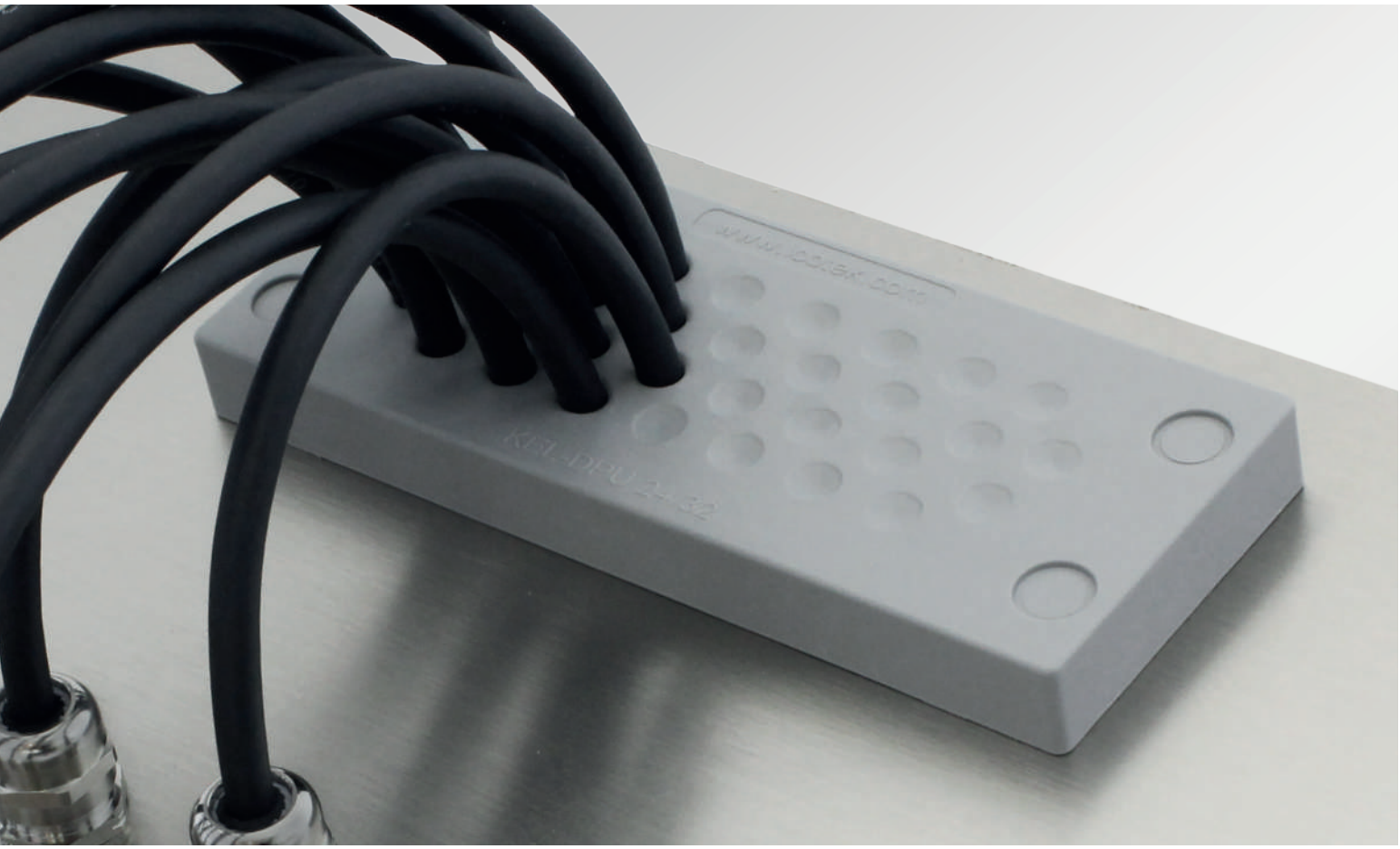
Specifications

Material	Elastomer
Color	gray (similar RAL 7035) black
IP Protection	IP54 (certified acc. to EN 60529)
Flame class	UL 94 V-0, self-extinguishing
Temperature	-40°C to +100°C (static)
Properties	Silicone free, halogen free

	Type	Cable diameter	Color	Order No.	PU
	UT-DT 1	1× max. 11 mm	gray	56020	10
	UT-DT 1	1× max. 11 mm	black	56120	10
	UT-DT 4	2× max. 6,4 mm 1× max. 4,2 mm 1× max. 3,2 mm	gray	56021	10
	UT-DT 4	2× max. 6,4 mm 1× max. 4,2 mm 1× max. 3,2 mm	black	56121	10
	UT-DT 5	3× max. 5,2 mm 2× max. 3,2 mm	gray	56022	10
	UT-DT 5	3× max. 5,2 mm 2× max. 3,2 mm	black	56122	10



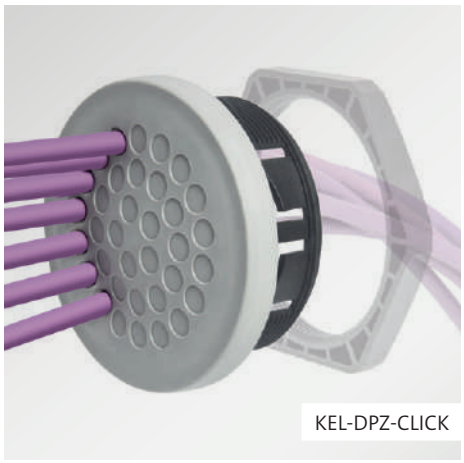
1
1.11
1.12
1.13
1.14
1.15
1.2
1.21
1.22
1.23
1.24
1.25
1.3

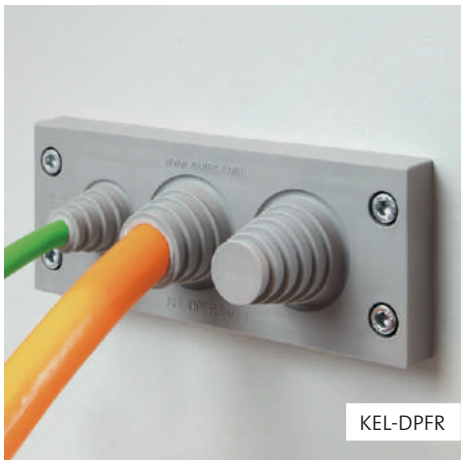


IP68
UL TYPE 4X
EN 45545-2
EN 45545-3
EN 61373
ISO 4892-2A
EN ISO 14644
PNEUMATICS
ECOLAB certified
RoHS compliant
UL-94 V0
+90°C -40°C
1.5–115 mm

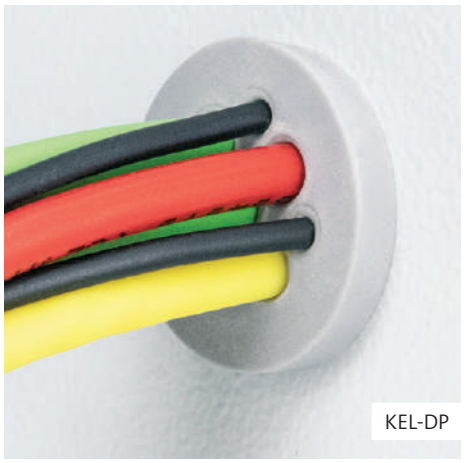
Cable Entry Systems
for Cables without Connectors

KEL-DPU

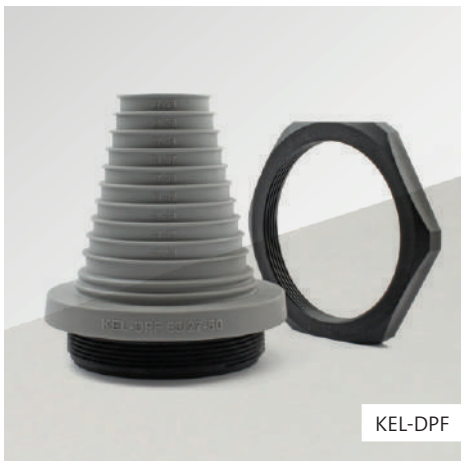

KEL-DPZ-CLICK

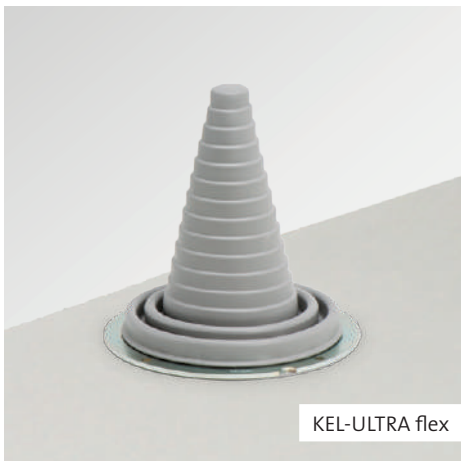

KEL-DPFR

KEL-DPR


KEL-DP

KEL-SCDP


KEL-DPF


KEL-ULTRA flex

Cable Entry Systems
for Cables without Connectors
2
2.1
2.2
2.3
2.4
2.5
2.6
2.7
2.8

2 Cable Entry Systems
for Cables without Connectors

For routing cables without connectors icotek offers a wide range of products with a lot of advantages and benefits in comparison to conventional cable glands.

The compact, slim and innovative design of the membrane-based cable entry plates offer a professional appearance and high ingress protection ratings up to IP68/UL type 4X.

Due to high cable densities especially suitable for applications where a lot of cables have to be entered through a small space.

For routing rigid and large diameter cables icotek offers highly flexible conical cable entry grommets with high protection ratings up to IP68/UL type 4X.

ProductFinder

Product	IP54	IP64	IP65	IP66	IP68	UL TYPE 12	UL TYPE 4X	Strain relief	Cable ø mm min | max	Max. number of cables	Page
KEL-DPU	●	●	●	●	●	●	●*	●	3.2 – 20.5	32	146 – 149
KEL-DPU-OD	●	●	●	●	●	●	●		3.2 – 20.5	32	150 – 151
KEL-DPZ 24	●	●	●	●		●		●	2.5 – 22	121	153 – 154
KEL-DPZ 16	●	●	●	●		●		●	3.2 – 16.2	34	155
KEL-DPZ 10	●	●	●	●		●		●	3.2 – 12	26	156
KEL-DPZ 6	●	●	●	●		●		●	2.5 – 8	27	157
KEL-DPZ-B	●	●	●	●		●		●	3.2 – 22	25	158
KEL-DPZ-E	●	●	●	●		●		●	3.2 – 12	21	159
KEL-DPZ-KX/KL	●	●	●			●		●	3.2 – 22	72	178 – 179
KEL-DPZ-FL21	●	●	●			in progress		●	5 – 22	36	180 – 181
KEL-DPZ round	●	●	●	●	●	●	●*	●	1.5 – 22.2	78	160 – 161
KEL-DPZ-CLICK round	●	●	●	●	●			●	1.5 – 22.2	78	162 – 163
KEL-DPZ CR	●	●	●	●	●	●	●*	●	1.5 – 22.2	78	417 – 419
KEL-DPFR	●	●	●	●		in progress	in progress		3 – 28	8	164 – 165
KEL-DPR	●	●	●			in progress	in progress	●	1 – 16.1	48	166 – 167
KEL-DP 24	●	●				●			max. 16.1	48	169
KEL-DP 16	●	●				●			max. 12.6	26	170
KEL-DP 10	●	●				●			max. 12.6	26	171
KEL-DP 6	●	●				●			max. 16.1	25	172
KEL-DP-E	●	●				●			max. 12.1	21	173
KEL-DP round	●	●	●			●			max. 22.5	35	174 – 176
KEL-DPU-HD	●	●	●	●	●			●	3.2 – 20.5	32	436 – 437
KEL-DPZ-HD round	●	●	●	●	●	●	●*	●	1.5 – 22.2	78	438 – 439
KEL-SCDP-TR	●	●	●						5 – 52	5	186 – 187
KEL-SCDP/-RW	●	●	●						5 – 36	1	188 – 189
KEL-DPF	●	●	●	●	●	●	●*	●	3 – 70	1	190 – 191
KEL-DPF-OD	●	●	●	●	●	in progress	●	●	3 – 70	1	192 – 193
KEL-JUMBO flex	●					●		●	27 – 68	1	195
KEL-ULTRA flex	●	●	●	●		●		●	25 – 115	1	194

Further details on certifications and technical specifications can be found on the product pages.

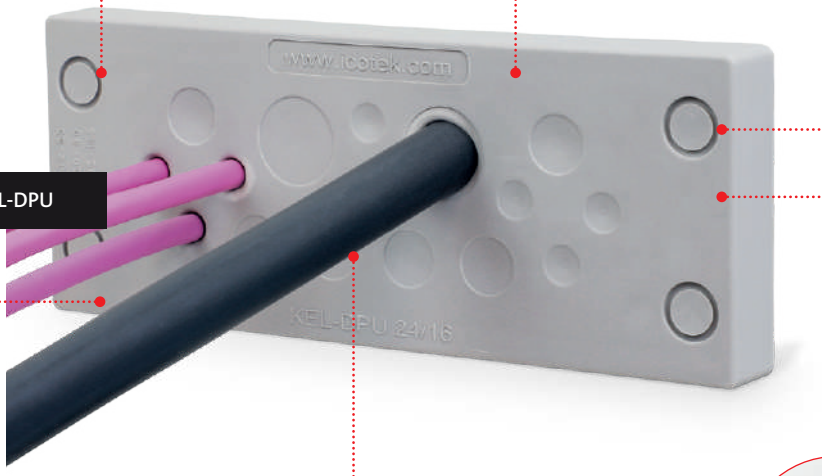
*4X for indoor use only

2.1 – 2.6 Cable Entry Plates
for Cables without Connectors

High cable density

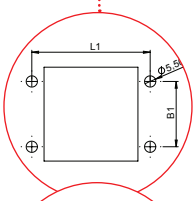
Fast and easy, partially tool-less assembly

Plugs for Membranes ST-B



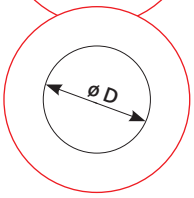
KEL-DPU

Compact, space-saving design

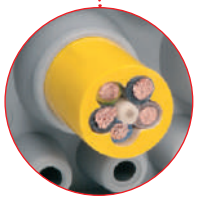


Many cut-outs acc. to industrial standard dimensions

IP64 to IP68 rated protection, double cable sealing on front and back (KEL-DPU/KEL-DPZ)



For metric cut-outs
M12 – M63
(KEL-DPZ/KEL-DP round)



Flexible clamping range

Cable Entry Plates
Screw-In or Snap-In Mounting,
High Strain Relief

KEL-DPU Series

146 – 149

Cable Entry Plates
for Extreme Conditions

KEL-DPU-OD

150 – 151

Cable Entry Plates
Screw Mounting, Strain Relief

KEL-DPZ Series

152 – 159

Cable Entry Plates
for Enclosures;
for FL21 Cut-Out

KEL-DPZ-KX/KL;
KEL-DPZ-FL21

178 – 181

Cable Entry Plates, Round
with Thread and Locknut M25 – M63,
Strain Relief

KEL-DPZ Round Series

160 – 161

Cable Entry Plates
for Snap-In or Screw-In Mounting
M25 – M63

KEL-DPZ-CLICK Series

162 – 163

Cable Entry Plates
for screw-in assembly,
with a flexible clamping range

KEL-DPFR

164 – 165

Cable Entry Plates
Screw Mounting, Strain Relief

KEL-DPR

166 – 167

Cable Entry Plates
Plug-In Mounting

KEL-DP Series

168 – 173

Cable Entry Plates, Round
Plug-In Mounting, M12 – M50

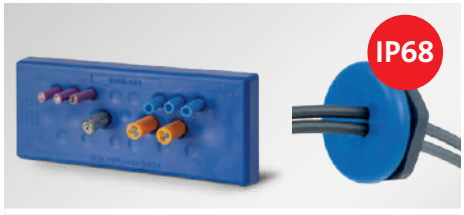
KEL-DP Round Series

174 – 176

Plugs for Membranes
and Multi-Range Cable Grommets
ST-B

Cover Plugs
for Cable Entry Plates

171, 182



Cable Entry Plates
Screw-In or Snap-In Mounting,
High Strain Relief
Hygienic Design Line

KEL-DPU-HD

436 – 439

KEL-DPU

Heavy-Duty Cable Entry Plates with High Strain Relief with IP66/IP68 Rating

KEL-DPU entry plates are designed to route and seal cables without connectors (from 3.2 mm to 20.5 mm in diameter) in limited space with IP66/IP68**/up to UL type 4X ratings. The KEL-DPU is particularly characterized by its solid robust frame and the increased strain relief of the routed cables.

The KEL-DPU 24 matches exactly the cut-out dimensions of 24-pin standard industrial connectors. For optional screw assembly just pierce the membranes on the integrated screw holes with the screw itself.

The assembly of the KEL-DPU with cables or pneumatic hoses can be done quick and easy. Simply make a small hole in the thin membrane and push the cables through. ST-B Plugs can be used for sealing pierced membranes if cables have been removed.

The version with threaded bushings enables the cable entry plate to be screwed onto the housing from the inside out. This protects against vandalism and tampering with the housing from the outside.

Advantages & Benefits

- Dual cable sealing with IP66/IP68**/up to UL type 4X
- Snap or screw mounting possible
- High strength and stability
- High strain relief
- Fast and easy assembly
- Very high cable density
- For industrial standard cut-outs
- Hygienic design – free of dirt-collecting recesses

Membrane on front

ST-B plug for the sealing of the perforated membrane

Also available in black.

Conical shape on back provides additional sealing and strain relief

This product range is also available as a KEL-DPU-HD version for the food sector, see pages 436 – 439.

*4X for indoor use only | ** IP67/IP68 only when screw mounted

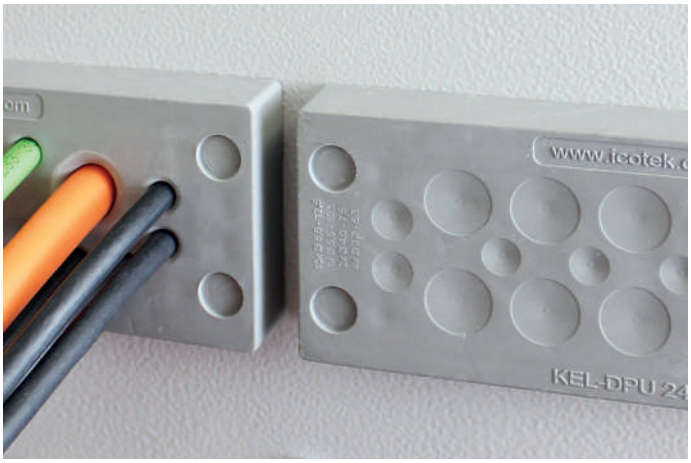
KEL-DPU
Heavy-Duty Cable Entry Plates with High Strain Relief
KEL-DPU 24

Specifications

Material	Frame: Polypropylene (PP) Sealing plate: Elastomer
Color	gray (similar RAL 7035) black
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP65/IP66/IP67/IP68** (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E) UL type 4X (acc. to UL 50E)
Operating temperature	-40°C to +100°C (static) -40°F to +212°F (static)
Properties	Halogen-free, silicone-free
Plate depth	14 mm
For wall thickness	1.5 – 2 mm (snap-in mounting)

Accessories

ST-B Plugs	177
KEL-EMC-PF Cable collectors	275
FP Flanged plates	332 - 341
KEA Cable Entry Adapter	352 - 355



Resistant against industrial detergents (ECOLAB certified)

Tool-less assembly possible due to snap-in function

Also available with threaded bushings

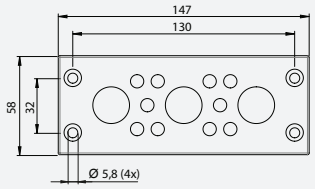
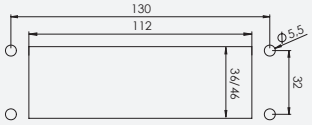
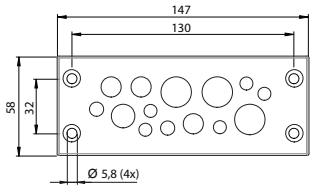
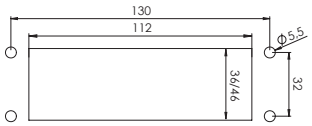
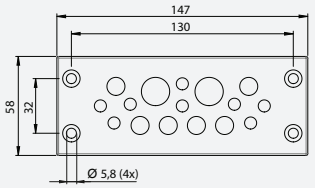
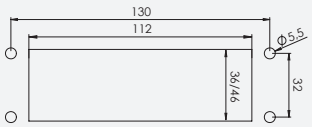
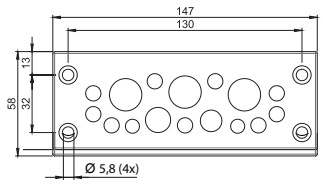
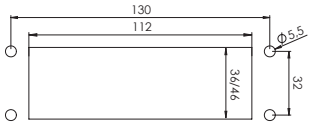
Can be combined with 90° cable entry adapter KEA

*4X for indoor use only | ** IP67/IP68 only when screw mounted

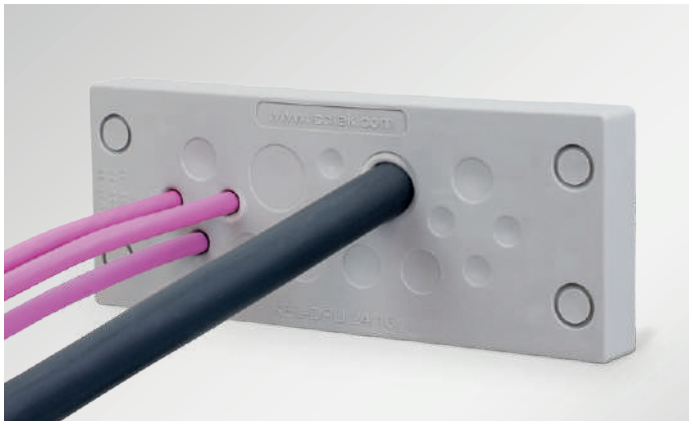
KEL-DPU

Heavy-Duty Cable Entry Plates with High Strain Relief

KEL-DPU 24

Description	Cut-out | Drilling template	Type	Cut-out mm	Number of cables	Order No.	PU
		KEL-DPU 24|13	36 x 112 mm 0.551 x 4.409"	10× 3.2 - 6.3 mm/ 0.126 - 0.248 " 3× 16 - 20.5 mm/ 0.63 - 0.807 "	43940 50940	10
		KEL-DPU 24|13 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"		43940.400 50940.400	10
		KEL-DPU 24|14	36 x 112 mm 0.551 x 4.409"	5× 3.2 - 6.3 mm/0.126 - 0.248" 2× 4 - 7.5 mm/0.157 - 0.295" 3× 5.5 - 10.5 mm/0.217 - 0.413" 1× 8 - 12.5 mm/0.315 - 0.492" 3× 12 - 16.2 mm/0.472 - 0.638"	43944 50944	10
		KEL-DPU 24|14 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"		43944.400 50944.400	10
		KEL-DPU 24|16	36 x 112 mm 0.551 x 4.409"	8× 3.2 - 5.5 mm/ 0.126 - 0.217" 6× 5 - 8.5 mm/ 0.197 - 0.335 " 2× 9.5 - 14.5 mm/ 0.374 - 0.571 "	43936 50936	10
		KEL-DPU 24|16 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"		43936.400 50936.400	10
		KEL-DPU 24|16-1	36 x 112 mm 0.551 x 4.409"	2× 3.2 - 6.3 mm/0.126 - 0.248" 9× 4 - 7.5 mm/0.157 - 0.295" 1× 5.5 - 10.5 mm/0.217 - 0.413" 1× 8 - 12.5 mm/0.315 - 0.492" 3× 12 - 16.2 mm/0.472 - 0.638 "	43932 50932	10
		KEL-DPU 24|16-1 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"		43932.400 50932.400	10

Also available in black



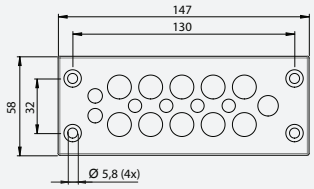
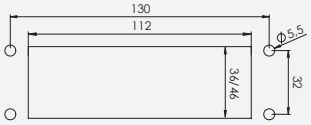
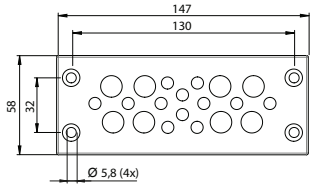
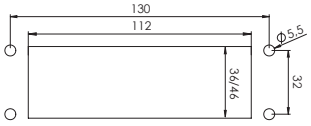
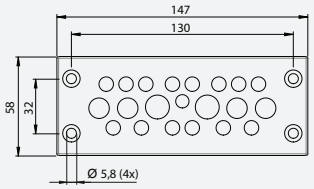
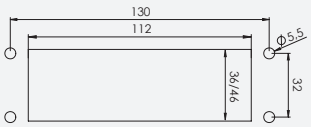
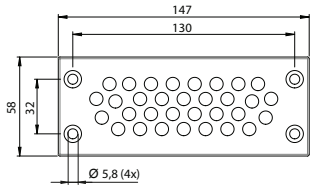
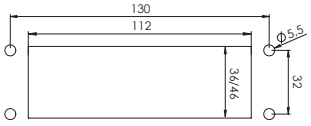
This product range is also available as a KEL-DPU-HD version for the food sector, see pages 436 – 437.

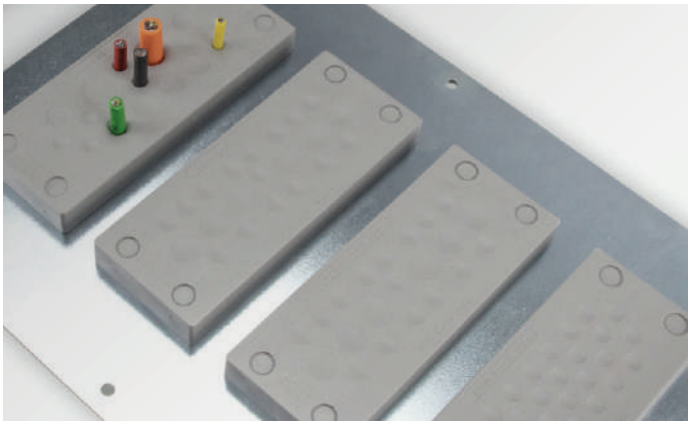
*4X for indoor use only | ** IP68 only when screw mounted

KEL-DPU

Heavy-Duty Cable Entry Plates with High Strain Relief

KEL-DPU 24

Description	Cut-out | Drilling template	Type	Cut-out mm	Number of cables	Order No.	PU
		KEL-DPU 24|17	36 x 112 mm 0.551 x 4.409"	4× 3.2 - 6.3 mm/ 0.126 - 0.248 " 2× 4 - 7.5 mm/ 0.157 - 0.295 " 1× 5.5 - 10.5 mm/ 0.217 - 0.413 " 10× 8 - 12.5 mm/ 0.315 - 0.492	43934 50934	10
		KEL-DPU 24|17 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"		43934.400 50934.400	10
		KEL-DPU 24|20	36 x 112 mm 0.551 x 4.409"	12× 3.2 - 5.5 mm/ 0.126 - 0.217 " 8× 5 - 10.5 mm/ 0.197 - 0.413 "	43938 50938	10
		KEL-DPU 24|20 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"		43938.400 50938.400	10
		KEL-DPU 24|21	36 x 112 mm 0.551 x 4.409"	1× 3.2 - 6.3 mm/ 0.126 - 0.248 " 14× 4 - 7.5 mm/ 0.157 - 0.295 " 4× 5.5 - 10.5 mm/ 0.217 - 0.413 " 2× 8 - 12.5 mm/ 0.315 - 0.492 "	43930 50930	10
		KEL-DPU 24|21 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"		43930.400 50930.400	10
		KEL-DPU 24|32	36 x 112 mm 0.551 x 4.409"	32× 3.2 - 6.3 mm/ 0.126 - 0.248 "	43942 50942	10
		KEL-DPU 24|32 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"		43942.400 50942.400	10



*4X for indoor use only | ** IP68 only when screw mounted

KEL-DPU-OD
Cable Entry Plates for Extreme Conditions

Maximum resistance for extreme conditions! The new KEL-DPU-OD series has been specially developed for applications where extreme environmental conditions are part of everyday life.

User Benefits

- High stability, vibration-proof
- Very simple assembly and installation
- High packing density for reliable and space-saving cable routing
- High strain relief for a long service life

The KEL-DPU-OD is ideally suited for applications in which cable entries are permanently exposed to strong UV radiation, weathering and temperature fluctuations. Compared to standard versions, it offers increased material resistance and extended service life in outdoor environments. Thanks to its approvals, it is particularly suitable for the use in photovoltaic systems (UL 6703, UL 6703A, UL 3703, UL 1703).

The KEL-DPU-OD enables many cables with diameters ranging from 3.2 to 20.5 mm to be routed and dual-sealed with IP66/IP68* protection in a very small space. Size 24 fits into standardised 24-pin heavy-duty connector cut-outs (36 x 112 mm).

Reliable protection in extreme climatic environments

Maximum protection against weather conditions such as rain, snow, UV radiation, dust and extreme temperatures.

F1 listing (UV and weather resistance according to UL 746C)

The long-term durability means an increased service life without embrittlement or material fatigue.

Quick and easy installation

Saves time and money during installation and maintenance.

High tightness and strain relief

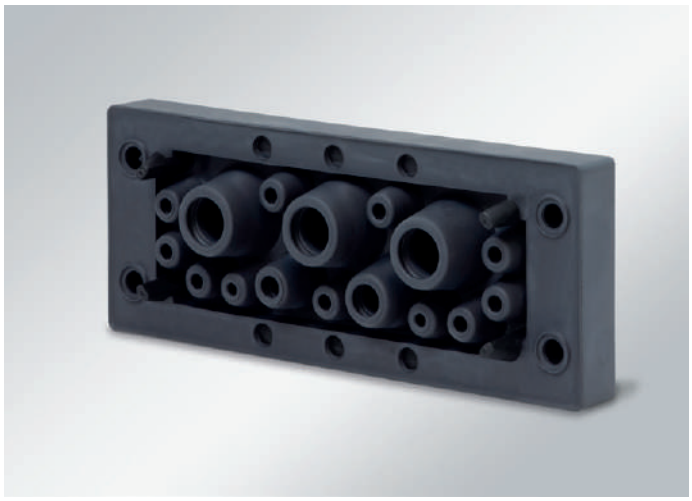
The high protection ratings ensure the performance of the cable installation, especially in outdoor areas.

Features

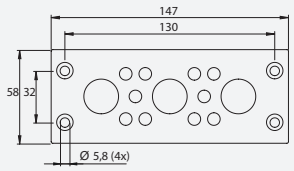
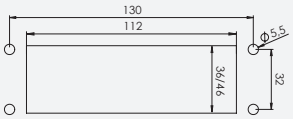
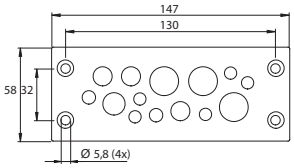
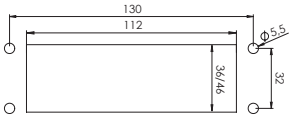
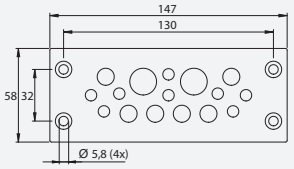
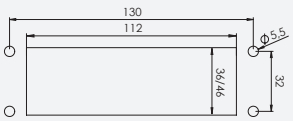
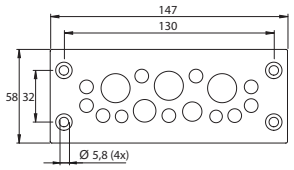
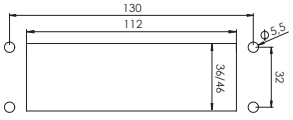
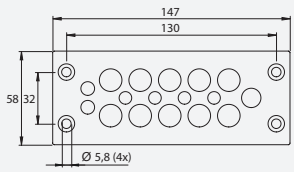
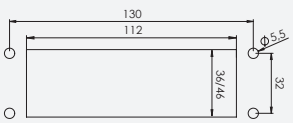
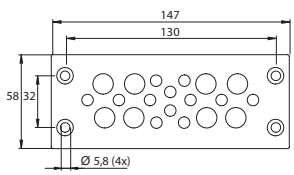
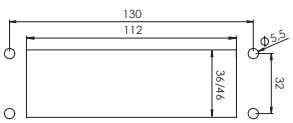
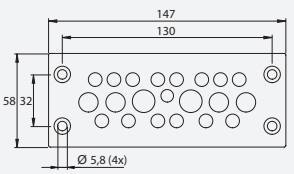
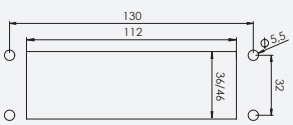
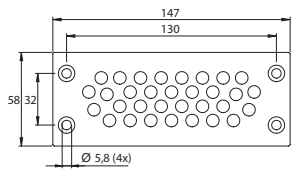
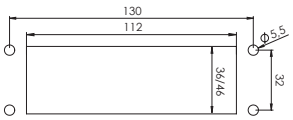
- Certified protection IP66/IP68* (in accordance with EN 60529)
- Snap-on/screw-on assembly
- Suitable for standardised cut-outs

Specifications

Material	Frame: Polyamide (PA) Membrane: TPE with UV resistance F1
Color	■ anthracite (similar RAL 7016)
Flame class	UL 94 V-1, self-extinguishing
IP rating	IP65/IP66/IP67/IP68* (certified according to EN 60529:2014-09)
Temperature	-40°C to +120°C (static)
Properties	Silicone free
Installation height	14 mm
Cut-out	36 x 112 mm



* IP67/IP68 only when screw mounted

Description	Cut-out | Drilling Template	Type	Cut-Out	Number of Cables	Order No.	PU
		KEL-DPU 24|13 OD	36 x 112 mm 0.551 x 4.409"		■ 63940	10
		KEL-DPU 24|13 OD with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	10× 3,2 – 6,3 mm 3× 16 – 20,5 mm	■ 63940.400	10
		KEL-DPU 24|13 OD with stainless steel threaded bushings M4	36 x 112 mm 0.551 x 4.409"		■ 63940.240	10
		KEL-DPU 24|14 OD	36 x 112 mm 0.551 x 4.409"		■ 63944	10
		KEL-DPU 24|14 OD with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	5× 3,2 – 6,3 mm 2× 4 – 7,5 mm 3× 5,5 – 10,5 mm 1× 8 – 12,5 mm	■ 63944.400	10
		KEL-DPU 24|14 OD with stainless steel threaded bushings M4	36 x 112 mm 0.551 x 4.409"	3× 12 – 16,2 mm	■ 63944.240	10
		KEL-DPU 24|16 OD	36 x 112 mm 0.551 x 4.409"		■ 63936	10
		KEL-DPU 24|16 OD with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	8× 3,2 – 5,5 mm 6 × 5 – 8,5 mm 2× 9,5 – 14,5 mm	■ 63936.400	10
		KEL-DPU 24|16 OD with stainless steel threaded bushings M4	36 x 112 mm 0.551 x 4.409"		■ 63936.240	10
		KEL-DPU 24|16-1 OD	36 x 112 mm 0.551 x 4.409"		■ 63932	10
		KEL-DPU 24|16-1 OD with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	2× 3,2 – 6,3 mm 9× 4 – 7,5 mm 1× 5,5 – 10,5 mm 1× 8 – 12,5 mm	■ 63932.400	10
		KEL-DPU 24|16-1 OD with stainless steel threaded bushings M4	36 x 112 mm 0.551 x 4.409"	3× 12 – 16,2 mm	■ 63932.240	10
		KEL-DPU 24|17 OD	36 x 112 mm 0.551 x 4.409"		■ 63934	10
		KEL-DPU 24|17 OD with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	4× 3,2 – 6,3 mm 2× 4 – 7,5 mm 1× 5,5 – 10,5 mm 10× 8 – 12,5 mm	■ 63934.400	10
		KEL-DPU 24|17 OD with stainless steel threaded bushings M4	36 x 112 mm 0.551 x 4.409"		■ 63934.240	10
		KEL-DPU 24|20 OD	36 x 112 mm 0.551 x 4.409"		■ 63938	10
		KEL-DPU 24|20 OD with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	12× 3,2 – 5,5 mm 8× 5 – 10,5 mm	■ 63938.400	10
		KEL-DPU 24|20 OD with stainless steel threaded bushings M4	36 x 112 mm 0.551 x 4.409"		■ 63938.240	10
		KEL-DPU 24|21 OD	36 x 112 mm 0.551 x 4.409"		■ 63930	10
		KEL-DPU 24|21 OD with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	1× 3,2 – 6,3 mm 14× 4 – 7,5 mm 4× 5,5 – 10,5 mm 2× 8 – 12,5 mm	■ 63930.400	10
		KEL-DPU 24|21 OD with stainless steel threaded bushings M4	36 x 112 mm 0.551 x 4.409"		■ 63930.240	10
		KEL-DPU 24|32 OD	36 x 112 mm 0.551 x 4.409"		■ 63942	10
		KEL-DPU 24|32 OD with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	32× 3,2 – 6,3 mm	■ 63942.400	10
		KEL-DPU 24|32 OD with stainless steel threaded bushings M4	36 x 112 mm 0.551 x 4.409"		■ 63942.240	10

KEL-DPZ Series
Cable Entry Plates with IP66 Rating

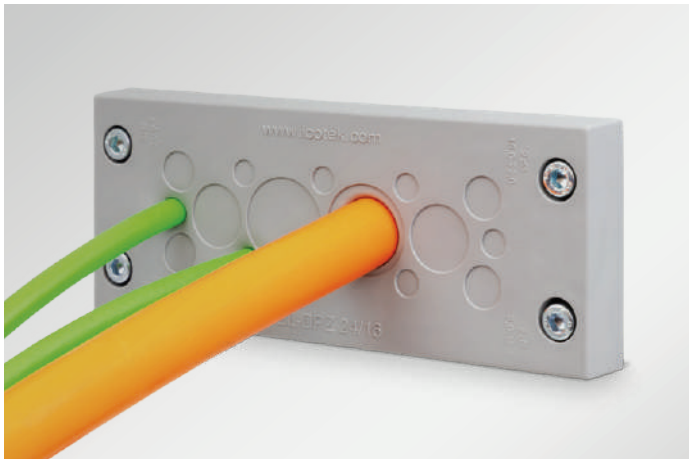
KEL-DPZ cable entry plates are designed to route and seal a large number of cables without connectors, hoses or fibre optics (from 2.5 mm to 22 mm in diameter) in limited space. The KEL-DPZ products are a cost and time saving alternative to traditional cable glands.

The assembly of the KEL-DPZ with cables or pneumatic hoses can be done quick and easy. Simply make a small hole in the thin membrane, push the cables through. The KEL-DPZ provides strain relief and protection up to IP66/UL type 12.

The KEL-DPZ matches exactly the cut-out dimensions of 6-, 10- 16- and 24-pin standard industrial connectors. The size KEL-DPZ-B fits on cut-outs 46 × 46 mm. The very compact size KEL-DPZ-E is designed for routing cables in very small space. Through a cut-out of only 18 × 112 mm, up to 21 cables can be easily routed and sealed.

Especially for Rittal KL and KX terminal boxes the size KEL-DPZ-KX/KL was created. It was designed for routing up to 72 cables through the pre-cut standard cut-out. The self-tapping screws (M4) required for assembly are included in the scope of delivery. ST-B Plugs can be used for sealing pierced membranes if cables have been removed.

The version with threaded bushings enables the cable entry plate to be screwed onto the housing from the inside out. This protects against vandalism and tampering with the housing from the outside.



Advantages & benefits

- Dual sealing acc. to IP65/IP66/UL type 12
- Fast and easy assembly
- High cable density
- High strain relief
- Hygienic design

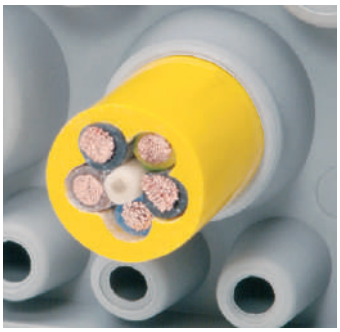
Also available in black

Also available with threaded bushings

Specifications

Material	Frame: Polyamide (PA) KEL-DPZ 6: Stainless steel V2A Sealing plate: Elastomer
Color	gray (similar RAL 7035) black
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP65/IP66 (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Operating Temperature	- 40°C to + 100°C (static) - 40°F to + 212°F (static)
Properties	Halogen-free, silicone-free
Plate depth	14 mm / 0.551 "

Membrane on front



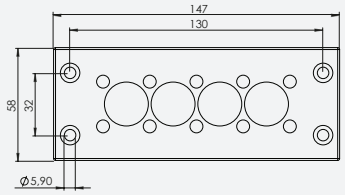
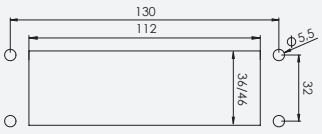
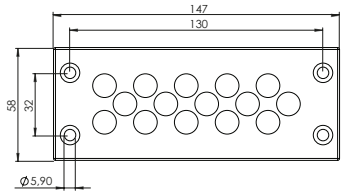
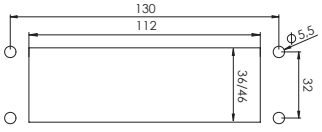
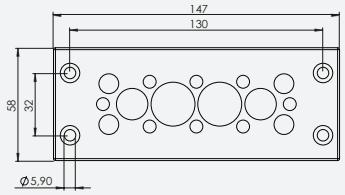
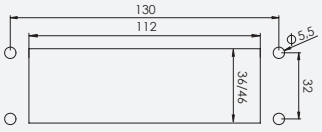
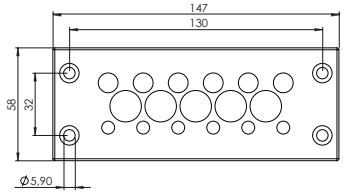
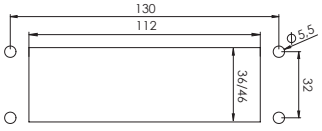
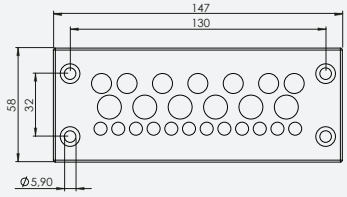
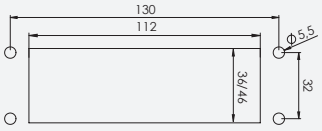
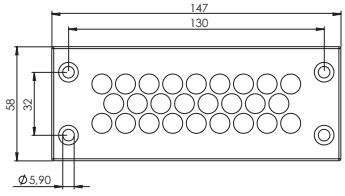
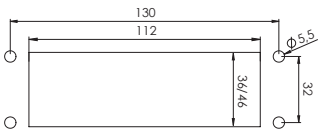
Conical shape on back provides additional sealing and strain relief

Accessories

ST-B Plugs	177
KEL-EMC-PF Cable collectors	275
FP Flanged plates	332 - 341

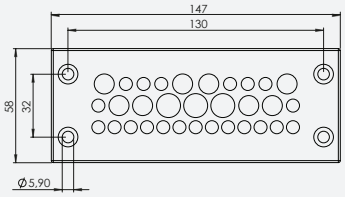
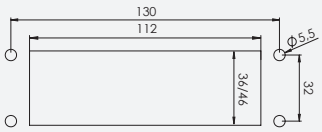
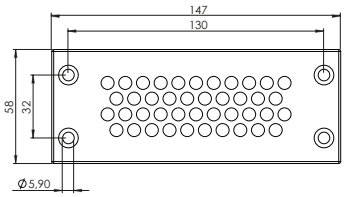
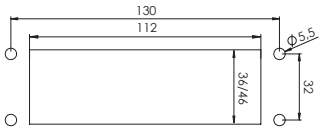
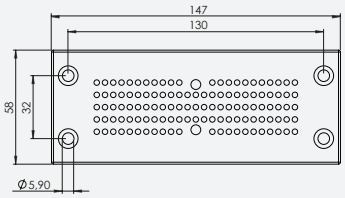
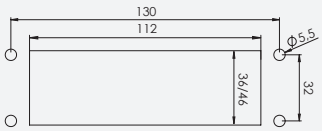
Can be combined with 90° cable entry adapter KEA

KEL-DPZ
Cable Entry Plates
KEL-DPZ 24

Description	Cut-out | Drilling template	Type	Cut-out mm	Number of cables	Order No.	PU
		KEL-DPZ 24|14	36 x 112 mm 0.551 x 4.409"	10× 3.2 - 6.5 mm / 0.126 - 0.248 " 4× 16 - 22 mm / 0.63 - 0.866 "	43700 50700	10
		KEL-DPZ 24|14 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	10× 3.2 - 6.5 mm / 0.126 - 0.248 " 4× 16 - 22 mm / 0.63 - 0.866 "	43700.400 50700.400	10
		KEL-DPZ 24|15	36 x 112 mm 0.551 x 4.409"	15× 7.5 - 12 mm / 0.295 - 0.472 "	43720 50720	10
		KEL-DPZ 24|15 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	15× 7.5 - 12 mm / 0.295 - 0.472 "	43720.400 50720.400	10
		KEL-DPZ 24|16	36 x 112 mm 0.551 x 4.409"	8× 3.2 - 6.5 mm / 0.126 - 0.248 " 4× 5 - 9.7 mm / 0.197 - 0.382 "	43725 50725	10
		KEL-DPZ 24|16 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	2× 9 - 16.2 mm / 0.354 - 0.638 " 2× 16 - 22 mm / 0.63 - 0.866 "	43725.400 50725.400	10
		KEL-DPZ 24|17	36 x 112 mm 0.551 x 4.409"	6× 3.2 - 6.5 mm / 0.126 - 0.248 " 6× 5 - 10.2 mm / 0.197 - 0.402 "	43705 50705	10
		KEL-DPZ 24|17 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	5× 9 - 16.2 mm / 0.354 - 0.638 "	43705.400 50705.400	10
		KEL-DPZ 24|25	36 x 112 mm 0.551 x 4.409"	12× 3.2 - 6.5 mm / 0.126 - 0.248 " 7× 4.8 - 9.7 mm / 0.189 - 0.382 " 6× 7.5 - 12 mm / 0.295 - 0.472 "	43710 50710	10
		KEL-DPZ 24|25 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"		43710.400 50710.400	10
		KEL-DPZ 24|26	36 x 112 mm 0.551 x 4.409"	26× 5.0 - 10.2 mm / 0.2 - 0.4 "	43711 50711	10
		KEL-DPZ 24|26 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	26× 5.0 - 10.2 mm / 0.2 - 0.4 "	43711.400 50711.400	10

The KEL-DPZ series is also available as a cleanroom version, see from page 417.

KEL-DPZ
Cable Entry Plates
KEL-DPZ 24

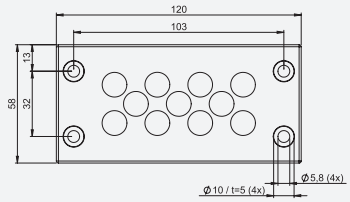
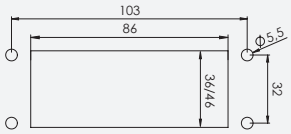
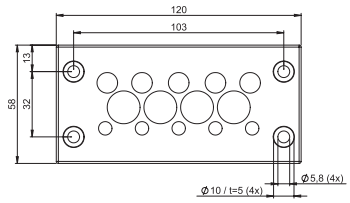
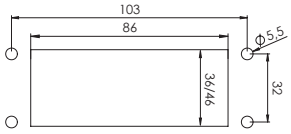
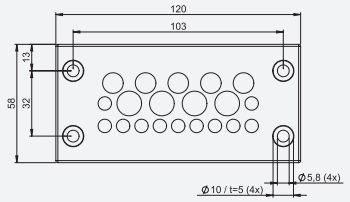
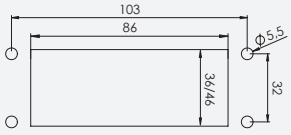
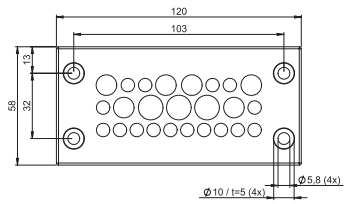
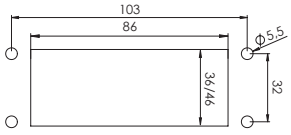
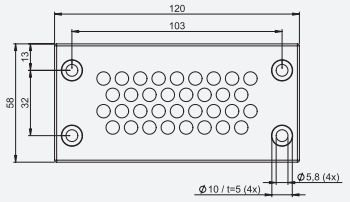
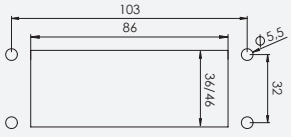
Description	Cut-out | Drilling template	Type	Cut-out mm	Number of cables	Order No.	PU
		KEL-DPZ 24|32	36 x 112 mm 0.551 x 4.409"	21× 3.2 - 6.5 mm / 0.126 - 0.248 " 8× 5 - 10.2 mm / 0.197 - 0.402 " 3× 7.5 - 12 mm / 0.295 - 0.472 "	43730 50730	10
		KEL-DPZ 24|32 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"		43730.400 50730.400	10
		KEL-DPZ 24|42	36 x 112 mm 0.551 x 4.409"	42× 3.2 - 6.5 mm / 0.126 - 0.248 "	43715 50715	10
		KEL-DPZ 24|42 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	42× 3.2 - 6.5 mm / 0.126 - 0.248 "	43715.400 50715.400	10
		KEL-DPZ 24|121	36 x 112 mm 0.551 x 4.409"	119× 1.5 - 2.6 mm / 0.059 - 0.102 " 2× 2.5 - 5 mm 0.098 - 0.197 "	43735 50735	10
		KEL-DPZ 24|121 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	119× 1.5 - 2.6 mm / 0.059 - 0.102 " 2× 2.5 - 5 mm 0.098 - 0.197 "	43735.400 50735.400	10

* Only valid for gray product types

High cable density

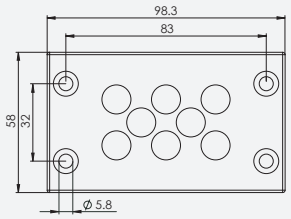
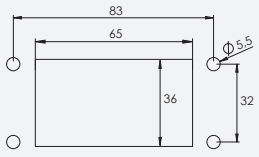
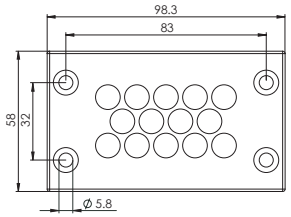
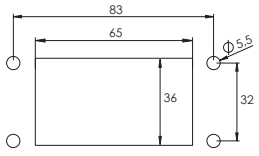
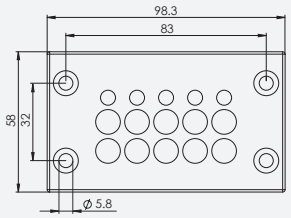
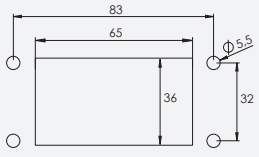
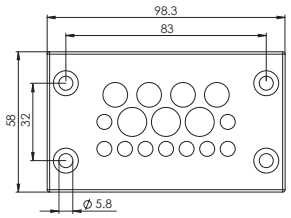
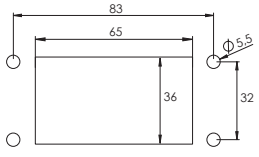
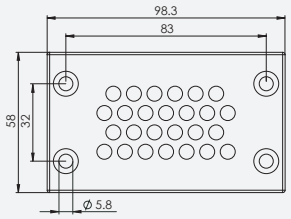
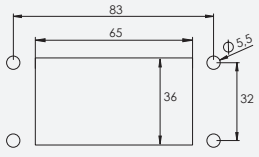
KEL-DPZ 16

KEL-DPZ
Cable Entry Plates
KEL-DPZ 16

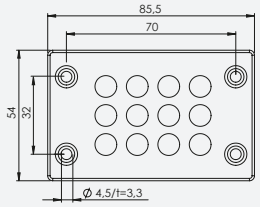
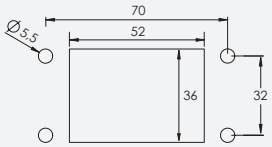
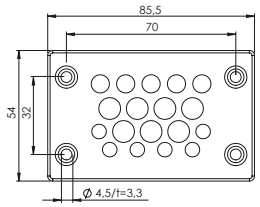
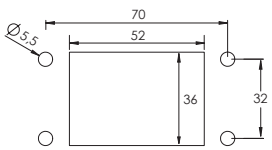
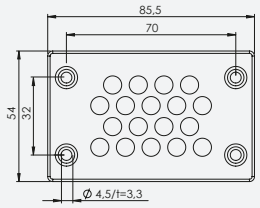
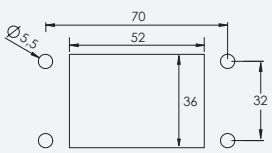
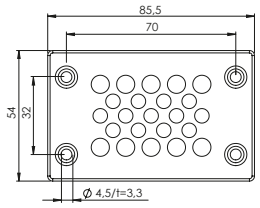
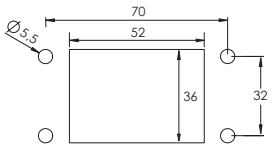
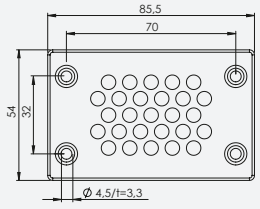
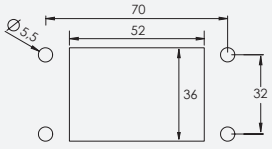
Description	Cut-out | Drilling template	Type	Cut-out mm	Number of cables	Order No.	PU
		KEL-DPZ 16|11	36 x 86 mm 0.551 x 3.386"	11× 7.5 - 12 mm / 0.295 - 0.472 "	43815	10
		KEL-DPZ 16|11 with threaded bushings M4	36 x 86 mm 0.551 x 3.386"	11× 7.5 - 12 mm / 0.295 - 0.472 "	43815.400	10
		KEL-DPZ 16|14	36 x 86 mm 0.551 x 3.386"	5× 3.2 - 6.5 mm / 0.126 - 0.256 " 5× 5 - 10.2 mm 0.197 - 0.402 " 4× 9 - 16.2 mm 0.354 - 0.638 "	43816	10
		KEL-DPZ 16|14 with threaded bushings M4	36 x 86 mm 0.551 x 3.386"		43816.400	10
		KEL-DPZ 16|20	36 x 86 mm 0.551 x 3.386"	11× 3.2 - 6.5 mm / 0.126 - 0.256 " 5× 5 - 10.2 mm / 0.197 - 0.402 " 4× 7.5 - 12 mm / 0.295 - 0.472 "	43817	10
		KEL-DPZ 16|20 with threaded bushings M4	36 x 86 mm 0.551 x 3.386"		43817.400	10
		KEL-DPZ 16|25	36 x 86 mm 0.551 x 3.386"	16× 3.2 - 6.5 mm / 0.126 - 0.256 " 6× 5 - 10.2 mm / 0.197 - 0.402 " 3× 7.5 - 12 mm / 0.295 - 0.472 "	43818	10
		KEL-DPZ 16|25 with threaded bushings M4	36 x 86 mm 0.551 x 3.386"		43818.400	10
		KEL-DPZ 16|34	36 x 86 mm 0.551 x 3.386"	34× 3.2 - 6.5 mm / 0.126 - 0.256 "	43819	10
		KEL-DPZ 16|34 with threaded bushings M4	36 x 86 mm 0.551 x 3.386"	34× 3.2 - 6.5 mm / 0.126 - 0.256 "	43819.400	10

The KEL-DPZ series is also available as a cleanroom version, see from page 417.

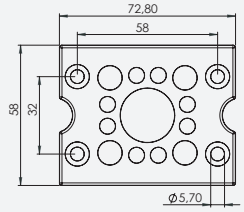
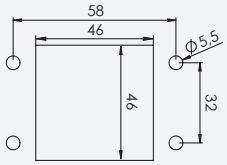
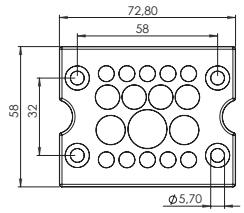
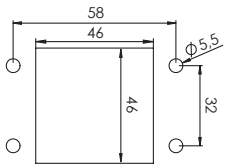
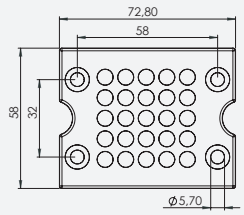
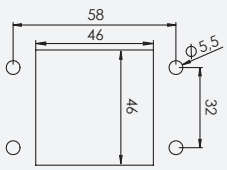
KEL-DPZ
Cable Entry Plates
KEL-DPZ 10

Type	Cut-out | Drilling template	Type	Cut-out mm	Number of cables	Order No.	PU
		KEL-DPZ 10|8	65 x 36 mm 2.560 x 0.551"	8 x 7.5 - 12 mm/ 0.295 - 0.472"	43800	10
		KEL-DPZ 10|8 with threaded bushings M4	65 x 36 mm 2.560 x 0.551"	8 x 7.5 - 12 mm/ 0.295 - 0.472"	43800.400	10
		KEL-DPZ 10|14	65 x 36 mm 2.560 x 0.551"	14 x 5 - 10.2 mm/ 0.197 - 0.402"	43801	10
		KEL-DPZ 10|14 with threaded bushings M4	65 x 36 mm 2.560 x 0.551"	14 x 5 - 10.2 mm/ 0.197 - 0.402"	43801.400	10
		KEL-DPZ 10|15	65 x 36 mm 2.560 x 0.551"	5 x 3.2 - 6.5 mm/ 0.126 - 0.248" 10 x 5 - 10.2 mm/ 0.197 - 0.402"	43802	10
		KEL-DPZ 10|15 with threaded bushings M4	65 x 36 mm 2.560 x 0.551"	5 x 3.2 - 6.5 mm/ 0.126 - 0.248" 10 x 5 - 10.2 mm/ 0.197 - 0.402"	43802.400	10
		KEL-DPZ 10|16	65 x 36 mm 2.560 x 0.551"	9 x 3.2 - 6.5 mm/ 0.126 - 0.248" 4 x 5 - 10.2 mm/ 0.197 - 0.402" 3 x 7.5 - 12 mm/ 0.295 - 0.472"	43803	10
		KEL-DPZ 10|16 with threaded bushings M4	65 x 36 mm 2.560 x 0.551"		43803.400	10
		KEL-DPZ 10|26	65 x 36 mm 2.560 x 0.551"	26 x 3.2 - 6.5 mm/ 0.126 - 0.248"	43804	10
		KEL-DPZ 10|26 with threaded bushings M4	65 x 36 mm 2.560 x 0.551"	26 x 3.2 - 6.5 mm/ 0.126 - 0.248"	43804.400	10

KEL-DPZ
Cable Entry Plates
KEL-DPZ 6

Description	Cut-out | Drilling template	Type	Cut-out mm	Number of cables	Order No.	PU
		KEL-DPZ 6|12	52 x 36 mm 2.047 x 0.551"	12 x 4.5 - 8.0 mm / 0.18 - 0.31"	43809	10
		KEL-DPZ 6|18-1	52 x 36 mm 2.047 x 0.551"	7 x 4.5 - 8.0 mm / 0.18 - 0.31" 5 x 3.2 - 6.5 mm / 0.13 - 0.26" 6 x 2.5 - 5.0 mm / 0.10 - 0.20"	43811	10
		KEL-DPZ 6|18	52 x 36 mm 2.047 x 0.551"	18 x 3.2 - 6.5 mm / 0.13 - 0.26"	43812	10
		KEL-DPZ 6|23	52 x 36 mm 2.047 x 0.551"	10 x 3.2 - 6.5 mm / 0.13 - 0.26" 13 x 2.5 - 5.0 mm / 0.10 - 0.20"	43813	10
		KEL-DPZ 6|27	52 x 36 mm 2.047 x 0.551"	27 x 2.5 - 5.0 mm / 0.10 - 0.20"	43814	10

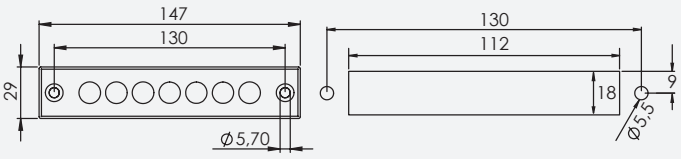
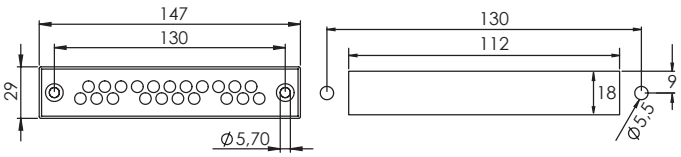
KEL-DPZ
Cable Entry Plates
KEL-DPZ-B

Description	Cut-out | Drilling template	Type	Cut-out mm	Number of cables	Order No.	PU
		KEL-DPZ-B 13	46 x 46 mm 1.811 x 1.811"	8× 3.2 - 6.5 mm / 0.126 - 0.248 " 4× 5 - 10.2 mm / 0.197 - 0.402 " 1× 16 - 22 mm / 0.63 - 0.866 "	43794 50794	10
		KEL-DPZ-B 13 with threaded bushings M4	46 x 46 mm 1.811 x 1.811"		43794.400 50794.400	10
		KEL-DPZ-B 17	46 x 46 mm 1.811 x 1.811"	10× 3.2 - 6.5 mm / 0.126 - 0.248 " 4× 5 - 10.2 mm / 0.197 - 0.402 " 2× 7.5 - 12 mm / 0.295 - 0.472 " 1× 9 - 16.2 mm / 0.354 - 0.638 "	43796 50796	10
		KEL-DPZ-B 17 with threaded bushings M4	46 x 46 mm 1.811 x 1.811"		43796.400 50796.400	10
		KEL-DPZ-B 25	46 x 46 mm 1.811 x 1.811"	25× 3.2 - 6.5 mm / 0.126 - 0.248 "	43798 50798	10
		KEL-DPZ-B 25 with threaded bushings M4	46 x 46 mm 1.811 x 1.811"	25× 3.2 - 6.5 mm / 0.126 - 0.248 "	43798.400 50798.400	10

KEL-DPZ-B

The KEL-DPZ series is also available as a cleanroom version, see from page 417.

KEL-DPZ
Cable Entry Plates
KEL-DPZ-E

Description	Cut-out | Drilling template	Type	Cut-out mm	Number of cables	Order No.	PU
		KEL-DPZ-E 112|7	18 x 112 mm 0.709 x 4.409"	7× 7.5 - 12 mm / 0.295 - 0.472 "	43780 50780	10
		KEL-DPZ-E 112|7 with threaded bushings M4	18 x 112 mm 0.709 x 4.409"	7× 7.5 - 12 mm / 0.295 - 0.472 "	43780.400 50780.400	10
		KEL-DPZ-E 112|21	18 x 112 mm 0.709 x 4.409"	21× 3.2 - 6.5 mm / 0.126 - 0.248 "	43790 50790	10
		KEL-DPZ-E 112|21 with threaded bushings M4	18 x 112 mm 0.709 x 4.409"	21× 3.2 - 6.5 mm / 0.126 - 0.248 "	43790.400 50790.400	10

KEL-DPZ-E

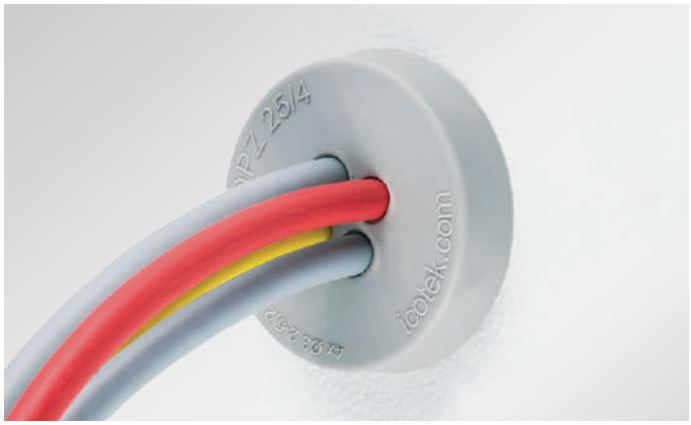
The KEL-DPZ series is also available as a cleanroom version, see from page 417.

KEL-DPZ Round Series
Cable Entry Plates with IP66/IP68 Rating

KEL-DPZ round cable entry plates are designed to route and seal cables without connectors or fibre optics (from 1.5 mm to 22 mm in diameter) in limited space.

The assembly of the KEL-DPZ round with cables or pneumatic hoses can be done quick and easy. Simply make a small hole in the thin membrane, push the cables through. The KEL-DPZ round provides strain relief and protection IP66/IP68/UL Type 4X.

The round versions of the KEL-DPZ series have a thread to fit in metric cut-outs from M25 to M63. Thus cut-outs for metric cable glands can be used. ST-B Plugs can be used for sealing pierced membranes if cables have been removed.



Advantages & benefits

- Dual sealing of cables acc. to IP66/IP68/up to UL type 4X
- Quick and easy tool-free assembly
- High cable density
- High strain relief
- Suitable for metric cut-outs
- Polyamide locknuts are included in the shipment
- Hygienic design – free of dirt-collecting recesses
- Available as an FDA compliant version

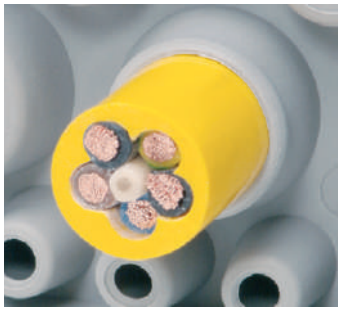
Specifications

Material	Thread frame: Polyamide (PA) Sealing plate: Elastomer
Color	gray (similar RAL 7035) black
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP65/IP66/IP67/IP68 (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E) UL type 4X (acc. to UL 50E)
Operating temperature	-40°C to +100°C (static) - 40°F to + 212°F (static)
Properties	Halogen-free, silicone-free
Cut-out dim.	Metric sizes
Thread length	14 mm / 0.551 "
Plate depth	8 mm / 0.315 "

Accessories

ST-B Plugs	177
FP Flanged plates	332 - 341
MP Module plates	326 - 327
TE-M	346 - 349

Membrane on front



Conical shape on back provides additional sealing and strain relief

Also available in black

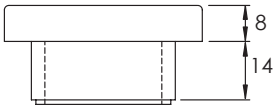
Can be combined with TE-M thread extension

ST-B plug for the sealing of the perforated membrane

This product range is also available as a KEL-DPZ-HD version for the food sector, see pages 428 – 429.
The KEL-DPZ round is also available as a cleanroom version, see from page 420.

*4X for indoor use only

KEL-DPZ Round
Cable Entry Plates



Type	Order No.	Number of cables	Thread metric	Thread length	Max. wall thickness	External diameter	Mounting height	PU
KEL-DPZ 25|3	43736 50736	2× 3.2 - 5.2 mm/0.126 - 0.20" 1× 3.2 - 6.5 mm/0.126 - 0.248"	M25 × 1.5	14 mm 0.551"	7 mm 0.276"	39 mm 1.535"	8 mm 0.315"	10
KEL-DPZ 25|4	43737 50737	4× 3.2 - 5.2 mm/0.126 - 0.20"	M25 × 1.5	14 mm 0.551"	7 mm 0.276"	39 mm 1.535"	8 mm 0.315"	10
KEL-DPZ 32|4	43732 50732	3× 3.2 - 6.5 mm/0.126 - 0.248" 1× 7.2 - 12.5 mm/0.295 - 0.472"	M32 × 1.5	14 mm 0.551"	7 mm 0.276"	44 mm 1.732"	8 mm 0.315"	10
KEL-DPZ 32|4-2	43733 50733	4× 5 - 9.5 mm/0.197 - 0.374"	M32 × 1.5	14 mm 0.551"	7 mm 0.276"	44 mm 1.732"	8 mm 0.315"	10
KEL-DPZ 32|7	43734 50734	7× 3.2 - 6.5 mm/0.126 - 0.248"	M32 × 1.5	14 mm 0.551"	7 mm 0.276"	44 mm 1.732"	8 mm 0.315"	10
KEL-DPZ 40|8	43741 50741	4× 3.2 - 6.5 mm/0.126 - 0.248" 4× 5 - 10.2 mm/0.197 - 0.402"	M40 × 1.5	14 mm 0.551"	7 mm 0.276"	52 mm 2.047"	8 mm 0.315"	10
KEL-DPZ 50|8	43750 50750	5× 5 - 10.2 mm/0.197 - 0.402" 3× 7.2 - 12.5 mm/0.295 - 0.472"	M50 × 1.5	14 mm 0.551"	6 mm 0.236"	62 mm 2.441"	8 mm 0.315"	10
KEL-DPZ 50|10	43751 50751	7× 3.2 - 6.5 mm/0.126 - 0.248" 2× 5 - 10.2 mm/0.197 - 0.402" 1× 16 - 22.2 mm/0.63 - 0.866"	M50 × 1.5	14 mm 0.551"	6 mm 0.236"	62 mm 2.441"	8 mm 0.315"	10
KEL-DPZ 50|12	43752 50752	4× 3.2 - 6.5 mm/0.126 - 0.248" 8× 5 - 10.2 mm/0.197 - 0.402"	M50 × 1.5	14 mm 0.551"	6 mm 0.236"	62 mm 2.441"	8 mm 0.315"	10
KEL-DPZ 50|19	43758 50758	19× 3.2 - 6.5 mm/0.126 - 0.248"	M50 × 1.5	14 mm 0.551"	6 mm 0.236"	62 mm 2.441"	8 mm 0.315"	10
KEL-DPZ 50|78	43756 50756	76× 1.5 - 2.6 mm 2× 2.5 - 5 mm	M50 × 1.5	14 mm 0.551"	6 mm 0.236"	62 mm 2.441"	8 mm 0.315"	10
KEL-DPZ 63|9	43760 50760	1× 3.2 - 6.5 mm/0.126 - 0.248" 3× 5 - 10.2 mm/0.197 - 0.402" 4× 9 - 16.2 mm/0.354 - 0.638" 1× 16 - 22.2 mm/0.63 - 0.866"	M63 × 1.5	14 mm 0.551"	6 mm 0.236"	75 mm 2.953"	8 mm 0.315"	10
KEL-DPZ 63|13	43761 50761	4× 3.2 - 6.5 mm/0.126 - 0.248" 4× 5 - 10.2 mm/0.197 - 0.402" 5× 9 - 16.2 mm/ 0.354 - 0.638"	M63 × 1.5	14 mm 0.551"	6 mm 0.236"	75 mm 2.953"	8 mm 0.315"	10
KEL-DPZ 63|14	43762 50762	14× 5 - 10.2 mm/0.197 - 0.402"	M63 × 1.5	14 mm 0.551"	6 mm 0.236"	75 mm 2.953"	8 mm 0.315"	10
KEL-DPZ 63|35	43763 50763	35× 3.2 - 6.5 mm/0.126 - 0.248"	M63 × 1.5	14 mm 0.551"	6 mm 0.236"	75 mm 2.953"	8 mm 0.315"	10

*4X for indoor use only

KEL-DPZ-CLICK Series
Cable Entry Plates for Snap-In or Screw-In Assembly with IP65/IP66/IP68 Rating

IP65 IP66 IP68

The round cable entry plates KEL-DPZ-CLICK are designed to route and seal cables without connectors or fiber optics (from 1.5 mm to 22 mm in diameter) in limited space.

The variant of the proven cable entry plate KEL-DPZ is snapped into the cut-out directly from the front. This significantly reduces the assembly time. Alternatively, the new variant can be fastened with a lock nut to achieve protection class IP66/IP68. The KEL-DPZ-CLICK series have a thread to fit in metric cut-outs from M25 to M63. Thus cut-outs for metric cable glands can be used. A lock nut is not included in the shipment.

Snap-in assembly:
For wall thickness 1 – 2.5 mm
Protection class IP65

Screwed in place with a lock nut:
For max. wall thickness 11 mm
Protection class IP66/IP68

Advantages & Benefits

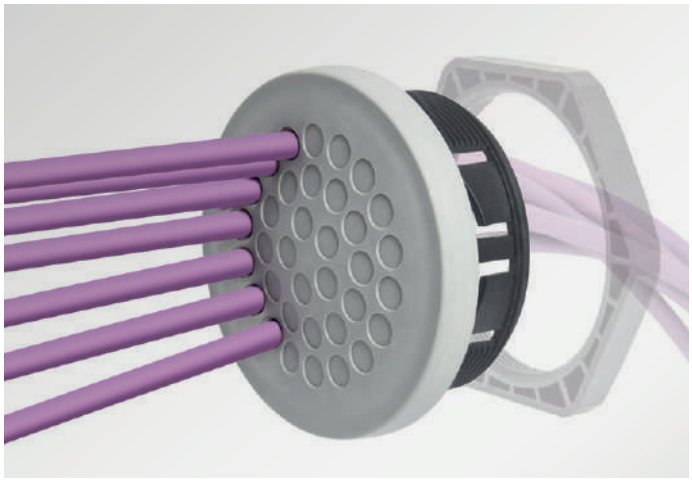
- Easy assembly directly from the front
- Offers two mounting types:
  Snap in (IP65) and Screw in (up to IP68)
- Certified protection IP65/IP66/IP68 (acc. to EN 60529)
- High cable density
- Automatic sealing and strain relief for the cable
- Suitable for metric cut-outs M25 – M63
- Snap-in assembly: For wall thickness 1.0 – 2.5 mm
- Screw assembly: For wall thickness up to 11 mm

Specifications

Material	Polyamid, Elastomere
IP rating	Snap-in: IP65 Screwed in place with lock nut: IP65/IP66/IP68
Flame class	UL 94 V-0, self-extinguishing
Temperature	-40°C to +100°C (static) -40°F to +212°F (static)
Color	gray (similar to RAL 7035)
Properties	Halogen free, silicone free
Mounting height	8 mm

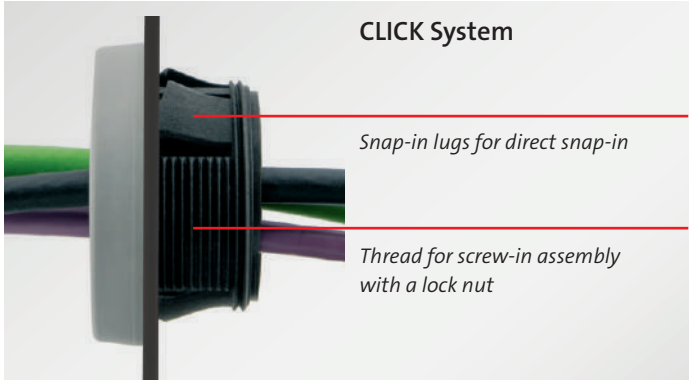
Accessories

KGM Locknuts	358
TE-M	346 - 349



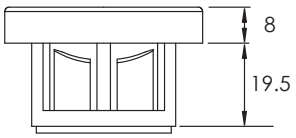
Mounting type 1:
Snap into the cut-out
For wall thickness 1 – 2.5 mm

Mounting type 2:
Screwed in place with a lock nut
For max. wall thickness 11 mm



KEL-DPZ-CLICK

Cable Entry Plates
for Snap-In or Screw-In Assembly



Type	Order No.	Number of cables	Thread metric	Thread length	External diameter	Mounting height	PU
KEL-DPZ-CLICK 25|3	44050	2× 3.2 - 5.2 mm/0.126 - 0.20" 1× 3.2 - 6.5 mm/0.126 - 0.248"	M25 × 1.5	19.5 mm 0.768"	39 mm 1.535"	8 mm 0.315"	10
KEL-DPZ-CLICK 25|4	44051	4× 3.2 - 5.2 mm/0.126 - 0.20"	M25 × 1.5	19.5 mm 0.768"	39 mm 1.535"	8 mm 0.315"	10
KEL-DPZ-CLICK 32|4	44052	3× 3.2 - 6.5 mm/0.126 - 0.248" 1× 7.2 - 12.5 mm/0.295 - 0.472"	M32 × 1.5	19.5 mm 0.768"	44 mm 1.732"	8 mm 0.315"	10
KEL-DPZ-CLICK 32|4-2	44053	4× 5 - 9.5 mm/0.197 - 0.374"	M32 × 1.5	19.5 mm 0.768"	44 mm 1.732"	8 mm 0.315"	10
KEL-DPZ-CLICK 32|7	44054	7× 3.2 - 6.5 mm/0.126 - 0.248"	M32 × 1.5	19.5 mm 0.768"	44 mm 1.732"	8 mm 0.315"	10
KEL-DPZ-CLICK 40|8	44055	4× 3.2 - 6.5 mm/0.126 - 0.248" 4× 5 - 10.2 mm/0.197 - 0.402"	M40 × 1.5	19.5 mm 0.768"	52 mm 2.047"	8 mm 0.315"	10
KEL-DPZ-CLICK 50|8	44056	5× 5 - 10.2 mm/0.197 - 0.402" 3× 7.2 - 12.5 mm/0.295 - 0.472"	M50 × 1.5	19.5 mm 0.768"	62 mm 2.441"	8 mm 0.315"	10
KEL-DPZ-CLICK 50|10	44057	7× 3.2 - 6.5 mm/0.126 - 0.248" 2× 5 - 10.2 mm/0.197 - 0.402" 1× 16 - 22.2 mm/0.63 - 0.866"	M50 × 1.5	19.5 mm 0.768"	62 mm 2.441"	8 mm 0.315"	10
KEL-DPZ-CLICK 50|12	44058	4× 3.2 - 6.5 mm/0.126 - 0.248" 8× 5 - 10.2 mm/0.197 - 0.402"	M50 × 1.5	19.5 mm 0.768"	62 mm 2.441"	8 mm 0.315"	10
KEL-DPZ-CLICK 50|19	44059	19× 3.2 - 6.5 mm/0.126 - 0.248"	M50 × 1.5	19.5 mm 0.768"	62 mm 2.441"	8 mm 0.315"	10
KEL-DPZ-CLICK 50|78	44060	76× 1.5 - 2.6 mm 2× 2.5 - 5 mm	M50 × 1.5	19.5 mm 0.768"	62 mm 2.441"	8 mm 0.315"	10
KEL-DPZ-CLICK 63|9	44061	1× 3.2 - 6.5 mm/0.126 - 0.248" 3× 5 - 10.2 mm/0.197 - 0.402" 4× 9 - 16.2 mm/0.354 - 0.638" 1× 16 - 22.2 mm/0.63 - 0.866"	M63 × 1.5	19.5 mm 0.768"	75 mm 2.953"	8 mm 0.315"	10
KEL-DPZ-CLICK 63|13	44062	4× 3.2 - 6.5 mm/0.126 - 0.248" 4× 5 - 10.2 mm/0.197 - 0.402" 5× 9 - 16.2 mm/ 0.354 - 0.638"	M63 × 1.5	19.5 mm 0.768"	75 mm 2.953"	8 mm 0.315"	10
KEL-DPZ-CLICK 63|14	44063	14× 5 - 10.2 mm/0.197 - 0.402"	M63 × 1.5	19.5 mm 0.768"	75 mm 2.953"	8 mm 0.315"	10
KEL-DPZ-CLICK 63|35	44064	35× 3.2 - 6.5 mm/0.126 - 0.248"	M63 × 1.5	19.5 mm 0.768"	75 mm 2.953"	8 mm 0.315"	10

KEL-DPFR
Cable Entry Plate with IP66/IP65 Protection

NEW | IP65 | IP66 | UL TYPE 12 | UL TYPE* 4X

The new series of cable entry plates is characterized by conical structures that allow a wide range of cable diameters to be routed through a single cut-out. Thanks to this shape, the cable entry can react flexibly to different diameters and at the same time it provides reliable strain relief and sealing. This allows installations to be carried out faster, more efficiently and in a more space-saving manner.

Another advantage of these cable entries is that they are based on standardized cut-outs. This facilitates integration into existing systems and ensures a high level of compatibility in various applications.

Flexible clamping range

Thanks to the special cone-shaped sealing membranes, cables of different diameters can be securely routed and fixed in place.

Easy installation

The cable entry can be easily inserted into standardised cut-outs and ensures a fast and tool-less installation.

High tightness

The cable entries offer a protection rating of up to IP66/IP65 and are therefore optimally sealed against dust, dirt and moisture.

Wide range of applications

Whether in mechanical and plant engineering, in automation technology or in enclosures – this solution is ideal for applications that require a high degree of flexibility in cable routing.

Benefits

- Maximum flexibility
- Very quick and easy installation
- Space-saving
- Very large clamping range from 3 – 28 mm
- Rigid cables can be inserted at an angle without breaking the membrane
- Two sizes with a total of seven configurations
- Only four screws required for installation
- Low storage costs

Features

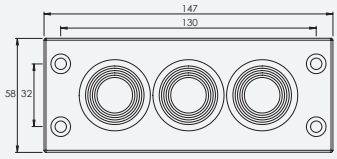
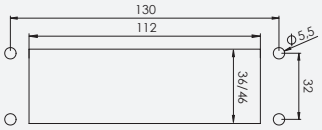
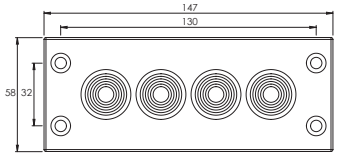
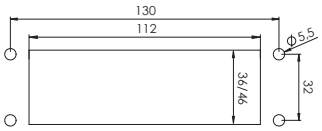
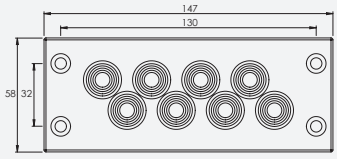
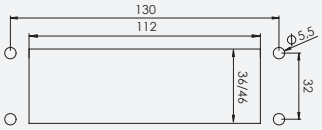
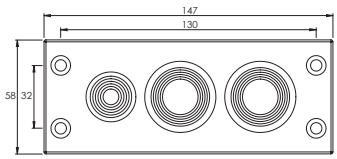
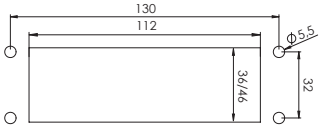
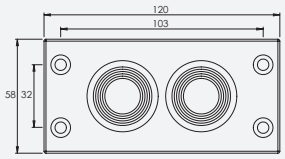
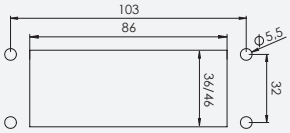
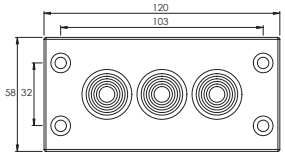
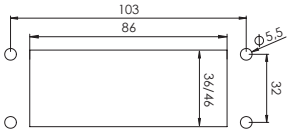
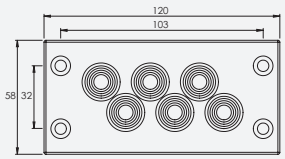
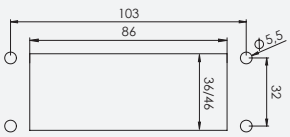
- Sealing according to IP66/65 (certified according to EN 60529:2000-09)
- Suitable for standard cut-outs
- Conical shape of the entry pots
- One-piece cable entry

Optimised membrane for easy insertion of rigid cables

Specifications

Material	Frame: Polyamide (PA) Membrane: Elastomere (TPE)
Color	gray (similar to RAL 7035), black
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP66/65 (certified according to EN 60529:2000-09)
Temperature	-40°C to +100°C (static) -40°F to +212°F (static)
Properties	Halogen free, silicone free
Installation height	KEL-DFPR 24|8: 40 mm KEL-DFPR 24|3: 47 mm KEL-DFPR 24|4: 47 mm

*4X for indoor use only

Description	Cut-out | Drilling template	Type	Cut-out dimension	Number of cables	Order No.	PU
		KEL-DPFR 24|3	36 x 112 mm	3x DPF 14 – 28	43915 53915	5
		KEL-DPFR 24|3 with threaded bushings M4	36 x 112 mm	3x DPF 14 – 28	43915.400 53915.400	5
		KEL-DPFR 24|4	36 x 112 mm	4x DPF 4 – 18	43916 53916	5
		KEL-DPFR 24|4 with threaded bushings M4	36 x 112 mm	4x DPF 4 – 18	43916.400 53916.400	5
		KEL-DPFR 24|8	36 x 112 mm	8x DPF 3 – 12	43917 53917	5
		KEL-DPFR 24|8 with threaded bushings M4	36 x 112 mm	8x DPF 3 – 12	43917.400 53917.400	5
		KEL-DPFR 24|3-1	36 x 112 mm	2x DPF 14 – 28 1x DPF 4 – 18	43918 53918	5
		KEL-DPFR 24|3-1 with threaded bushings M4	36 x 112 mm	2x DPF 14 – 28 1x DPF 4 – 18	43918.400 53918.400	5
		KEL-DPFR 16|2	36 x 112 mm	2x DPF 14 – 28	43920 53920	5
		KEL-DPZ 16|2 with threaded bushings M4	36 x 112 mm	2x DPF 14 – 28	43920.400 53920.400	5
		KEL-DPFR 16|3	36 x 112 mm	3x DPF 4 – 18	43921 53921	5
		KEL-DPFR 16|3 with threaded bushings M4	36 x 112 mm	3x DPF 4 – 18	43921.400 53921.400	5
		KEL-DPFR 16|6	36 x 86 mm	6x DPF 3 – 12	43922 53922	5
		KEL-DPFR 16|6 with threaded bushings M4	36 x 86 mm	6x DPF 3 – 12	43922.400 53922.400	5

2
2.1
2.2
2.3
2.4
2.5
2.6
2.7
2.8

*4X for indoor use only

KEL-DPR
Cable Entry Plates for Screw-In Assembly, with IP65 Rating

The KEL-DPR 24 cable entry plate is based on the proven KEL-DP 24, but has an integrated polypropylene reinforcement frame. With the KEL-DPR 24, up to 48 cables from 1 to 16.1 mm can be inserted in the smallest of spaces and sealed in accordance with IP65.

The KEL-DPR 24 cable entry fits standard cut-outs for 24-pin heavy-duty connectors.

Electrical and pneumatic lines can be assembled in a matter of seconds. The corresponding membrane is perforated and the cables are simply pushed through. Perforated membranes can be sealed with ST-B plugs.

The KEL-DPR is available in the color black. A version with M4 threaded bushings is optionally available for screw assembly from the rear.

Advantages

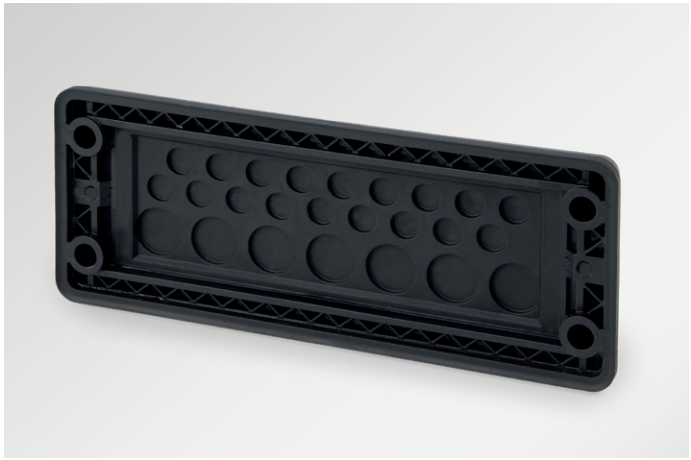
- Good strain relief due to reinforced membrane
- Sealing in accordance with IP65
- Very quick installation
- Very high packing density
- Suitable for standardised cut-outs
- Optionally available with M4 threaded bushes
- Visually attractive design

Specifications

Material	Frame: Polypropylene (PP) Membrane: Elastomer
Color	■ black
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP64/IP65 (certified acc. to EN 60529-2000-09)
Temperature	-40°C to +90°C (static)
Properties	Halogen free, silicone free
Mounting height	10 mm

Accessories

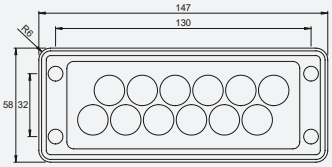
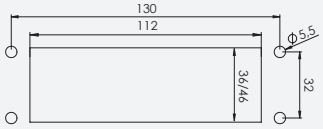
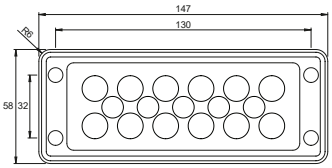
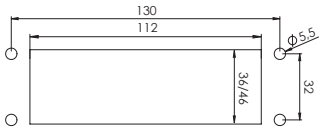
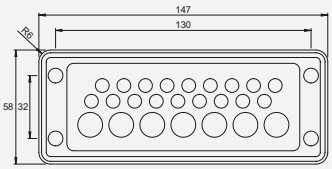
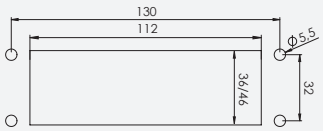
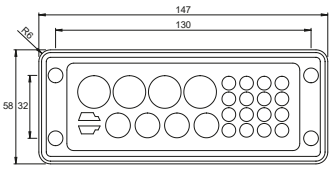
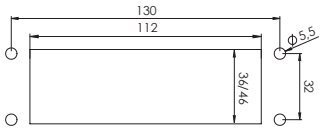
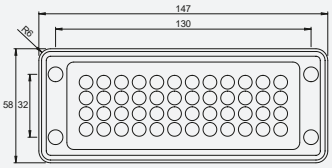
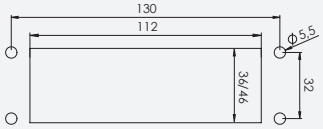
ST-B Plugs	177
KEA	352 - 355

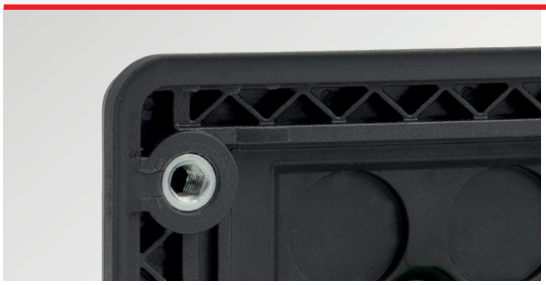


Reverse

KEL-DPR
Cable Entry Plates for Screw-In Assembly

IP64 | IP65 | UL TYPE 12 | HL3 EN 45545-2 | UV ISO 4892-2A | ECOLAB certified | RoHS compliant

Description	Cut-out | Drilling template	Type	Cut-out mm	Number of cables	Order No.	PU
		KEL-DPR 24|12	112 x 36 mm	12× max. 15 mm	46500	10
		KEL-DPR 24|17	112 x 36 mm	5× max. 10,5 mm 12× max. 12,6 mm	46501	10
		KEL-DPR 24|25	112 x 36 mm	18× max. 6,5 mm 7× max. 12,1 mm	46502	10
		KEL-DPR 24|26	112 x 36 mm	16× max. 6,5 mm 4× max. 12,1 mm 4× max. 16,1 mm 2× ASI cable	46503	10
		KEL-DPR 24|48	112 x 36 mm	48× max. 6,5 mm	46504	10



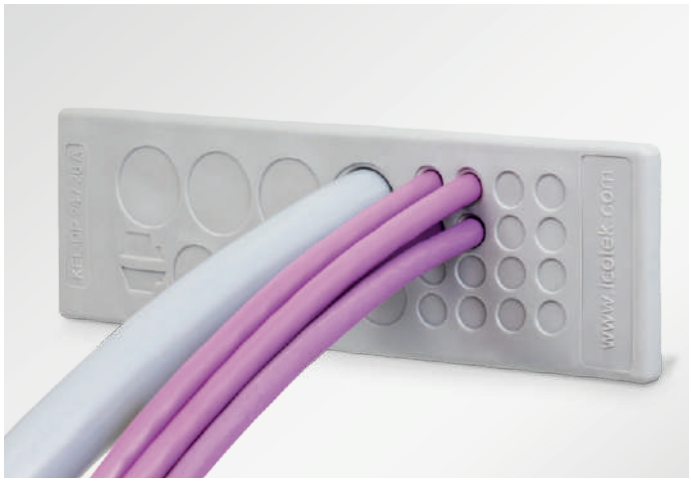
Also available with threaded bushings

KEL-DP Series
Cable Entry Plates with IP64 Rating

KEL-DP entry plates are designed for routing cables without connectors, hoses or fibre optics in limited space.

The KEL-DP products are an easy to assemble and cost saving alternative to traditional cable glands. Simply make a small hole in the thin membrane and push the cables through. The KEL-DP provides protection IP64/ UL type 12.

The KEL-DP matches exactly the cut-out dimensions of 6-, 10-, 16- and 24-pin standard industrial connectors. The very compact size KEL-DP-E is designed for routing cables in very small space. Through a cut-out of only 18 × 112 mm, up to 21 cables can be easily routed and sealed. A special rib ensures a centred fit in the cut-outs. ST-B Plugs can be used for sealing pierced membranes if cables have been removed.



Advantages & benefits

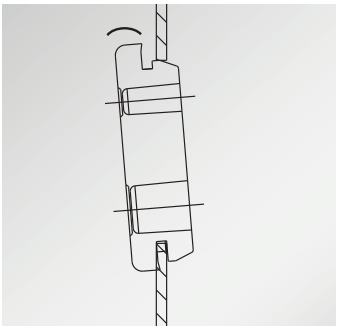
- Fast and easy assembly, no tools required
- Very good strain relief on the cable bundle
- Very high cable density
- Cost-effective
- Hygienic design – free of dirt-collecting recesses
- For wall thickness 1.5 - 4 mm / 0.039 - 0.157 "

Specifications

Material	Elastomer
Color	gray (similar RAL 7035) black
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP64 (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Operating temperature	-40°C to +100°C (static) - 40°F to + 212°F (static)
Properties	Halogen-free, silicone-free
Plate depth	5 mm / 0.197
Type A:	For wall thickness 1.5 - 2.5 mm
Type B:	For wall thickness 2.8 - 4 mm

Accessories

ST-B Plugs	177
FP Flanged plates	332 - 341
KEA Cable Entry Adapter	352 - 355

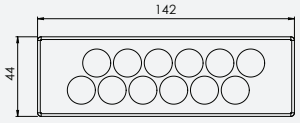
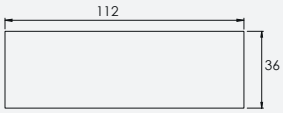
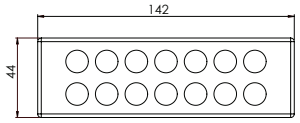
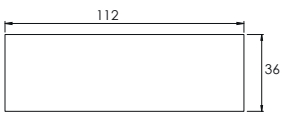
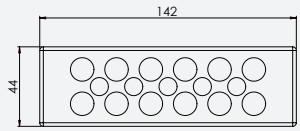
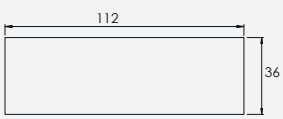
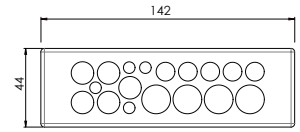
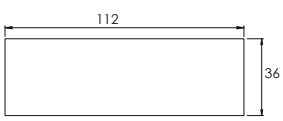
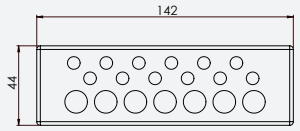
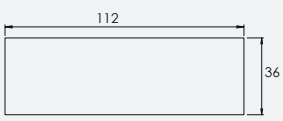
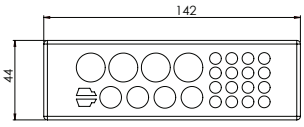
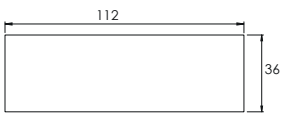
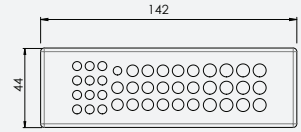
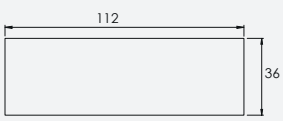
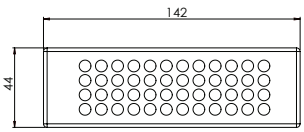
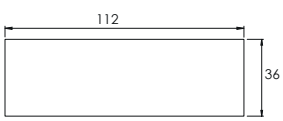
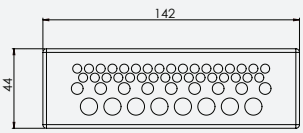
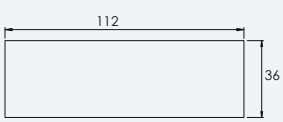


Fastening

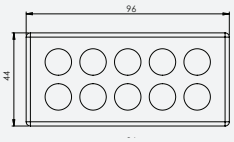
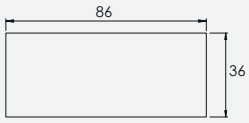
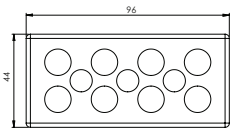
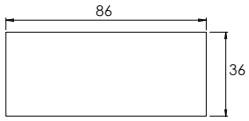
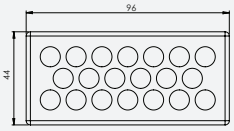
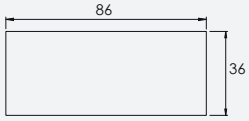
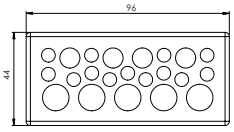
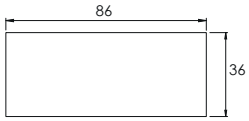
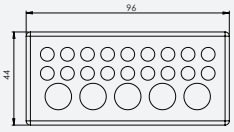
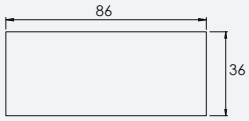
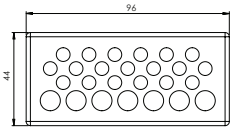
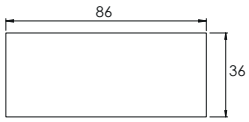
Also available in black

Can be combined with 90° cable entry adapter KEA

KEL-DP
Cable Entry Plates
KEL-DP 24

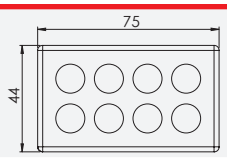
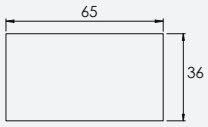
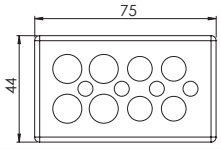
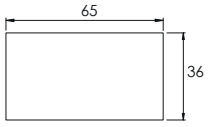
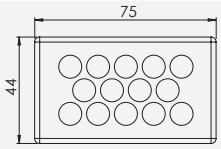
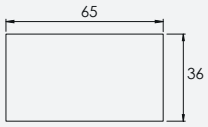
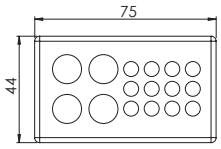
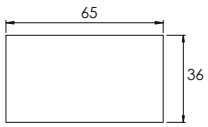
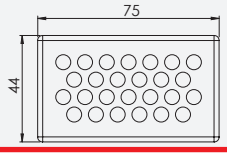
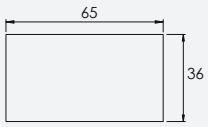
Description	Cut-out	Type	Cut-out mm	Number of cables	Order No. Type A	Order No. Type B	PU
		KEL-DP 24|12	36 x 112 mm 0.551 x 4.409"	12× max. 15 mm / 0.591"	43508 50508	43510 50510	10
		KEL-DP 24|14	36 x 112 mm 0.551 x 4.409"	14× max. 12.1 mm / 0.476 "	43512 50512	43522 50522	10
		KEL-DP 24|17	36 x 112 mm 0.551 x 4.409"	5× max. 10.5 mm / 0.413 " 12× max. 12.6 mm / 0.496 "	43514 50514	43523 50523	10
		KEL-DP 24|18	36 x 112 mm 0.551 x 4.409"	4× max. 6.5 mm/0.256" 5× max. 10.5 mm 0.413" 5× max. 12.6 mm/0.496" 4× max. 16.1 mm/0.634"	43515 50515	43528 50528	10
		KEL-DP 24|19	36 x 112 mm 0.551 x 4.409"	12× max. 6.5 mm / 0.256 " 7× max. 12.1 mm / 0.476 "	43516 50516	43524 50524	10
		KEL-DP 24|26	36 x 112 mm 0.551 x 4.409"	16× max. 6.5 mm / 0.256 " 4× max. 12.1 mm / 0.476 " 4× max. 16.1 mm / 0.634 " 2× ASI cables	43518 50518	43525 50525	10
		KEL-DP 24|42	36 x 112 mm 0.551 x 4.409"	12× max. 7.2 mm / 0.283 " 17× max. 6.4 mm / 0.252 " 12× max. 5 mm / 0.197 " 1× max. 4.7 mm / 0.185 "	43511 50511	43521 50521	10
		KEL-DP 24|48	36 x 112 mm 0.551 x 4.409"	48x max. 6.5 mm / 0.256 "	43519 50519	43526 50526	10
		KEL-DP 24|50	36 x 112 mm 0.551 x 4.409"	33x max. 5.3 mm / 0.209 " 9× max. 6.4 mm / 0.252 " 8× max. 8.3 mm / 0.328 "	43520 50520	43527 50527	10

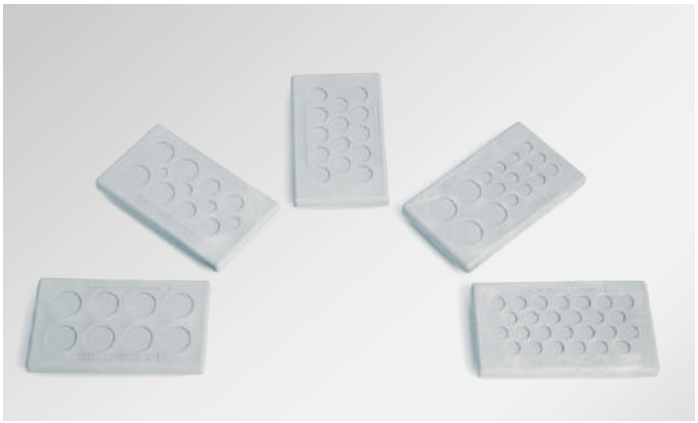
KEL-DP
Cable Entry Plates
KEL-DP 16

Description	Cut-out	Type	Cut-out mm	Number of cables	Art.-Nr.	PU
		KEL-DP 16|10	36 x 86 mm 0.551 x 3.386"	10 x max. 12.1 mm / 0.48"	43460	10
		KEL-DP 16|11	36 x 86 mm 0.551 x 3.386"	3 x max. 10.5 mm / 0.41" 8 x max. 12.6 mm / 0.496"	43461	10
		KEL-DP 16|20	36 x 86 mm 0.551 x 3.386"	20 x max. 8.3 mm / 0.33"	43462	10
		KEL-DP 16|22	36 x 86 mm 0.551 x 3.386"	5 x max. 12.1 mm / 0.48" 4 x max. 8.3 mm / 0.33" 13 x max. 6.5 mm / 0.26"	43463	10
		KEL-DP 16|23	36 x 86 mm 0.551 x 3.386"	18 x max. 6.5 mm / 0.26" 5 x max. 12.1 mm / 0.48"	43464	10
		KEL-DP 16|26	36 x 86 mm 0.551 x 3.386"	19 x max. 6.5 mm / 0.26" 7 x max. 8.3 mm / 0.33"	43465	10

KEL-DP 16

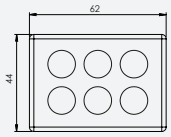
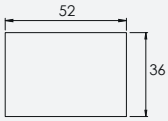
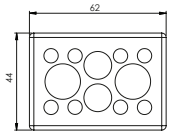
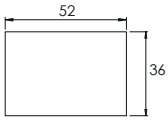
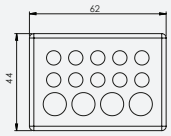
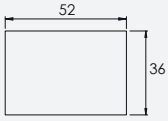
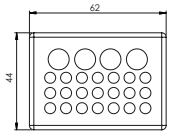
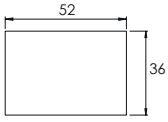
KEL-DP
Cable Entry Plates
KEL-DP 10

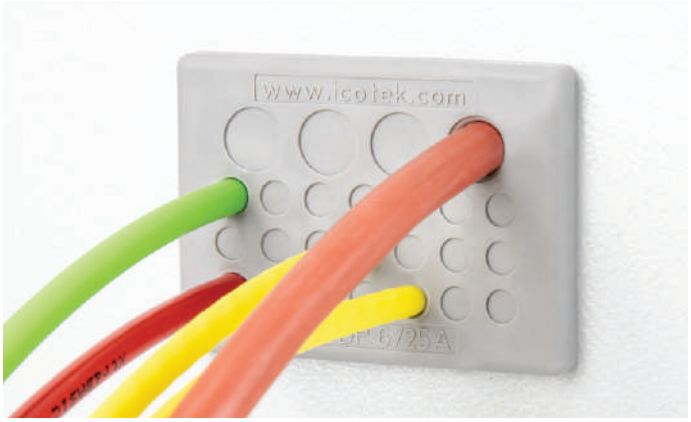
Description	Cut-out	Type	Cut-out mm	Number of cables	Art.-Nr.	PU
		KEL-DP 10|8	65 x 36 mm 2.560 x 0.551"	8 x max. 12.6 mm/0.496"	43466	10
		KEL-DP 10|12	65 x 36 mm 2.560 x 0.551"	4 x max. 6.5 mm/0.26" 4 x max. 8.3 mm/0.33" 4 x max. 12.6 mm/0.496"	43467	10
		KEL-DP 10|14	65 x 36 mm 2.560 x 0.551"	14 x max. 8.3 mm/0.33"	43468	10
		KEL-DP 10|16	65 x 36 mm 2.560 x 0.551"	12 x max. 6.5 mm/0.26" 4 x max. 12.6 mm/0.496"	43469	10
		KEL-DP 10|26	65 x 36 mm 2.560 x 0.551"	26 x max. 6.5 mm/0.26"	43470	10



KEL-DP 10

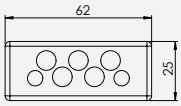
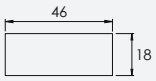
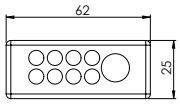
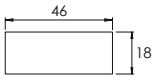
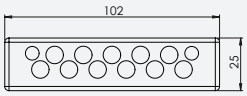
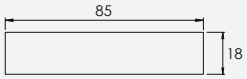
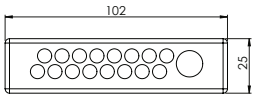
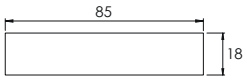
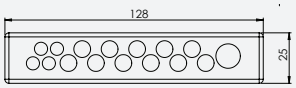
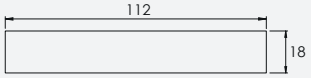
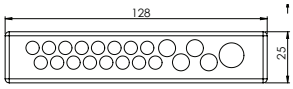
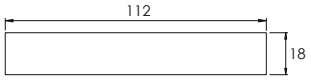
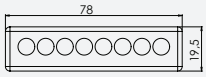
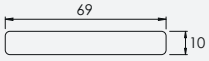
KEL-DP
Cable Entry Plates
KEL-DP 6

Description	Cut-out	Type	Cut-out mm	Number of cables	Art.-Nr.	PU
		KEL-DP 6|6	52 x 36 mm 2.047 x 0.551"	6 x max. 12.1 mm/0.48"	43450	10
		KEL-DP 6|12	52 x 36 mm 2.047 x 0.551"	8 x max. 6.5 mm/0.26" 2 x max. 12.6 mm/0.496" 2 x max. 16.1 mm/0.63"	43451	10
		KEL-DP 6|14	52 x 36 mm 2.047 x 0.551"	10 x max. 6.5 mm/0.26" 4 x max. 10.5 mm/0.41"	43452	10
		KEL-DP 6|25	52 x 36 mm 2.047 x 0.551"	21 x max. 5.0 mm/0.20" 4 x max. 8.3 mm/0.33"	43453	10



KEL-DP 6

KEL-DP
Cable Entry Plates
KEL-DP-E

Description	Cut-out	Type	Cut-out mm	Number of cables	Art.-Nr.	PU
		KEL-DP-E 46|7	46 x 18 mm 1.811 x 0.709"	5× max. 8.3 mm/0.327" 2× max. 6.5 mm/0.256"	43585 50585	10
		KEL-DP-E 46|9	46 x 18 mm 1.811 x 0.709"	8× max. 6.5 mm/0.256" 1× max. 12.1 mm/0.476"	43587 50587	10
		KEL-DP-E 86|13	85 × 18 mm 3.346 x 0.709"	11× max. 8.3 mm/0.327" 2× max. 6.5 mm/0.256"	43581 50581	10
		KEL-DP-E 86|17	85 × 18 mm 3.346 x 0.709"	16× max. 6.5 mm/0.256" 1× max. 12.1 mm/0.476"	43583 50583	10
		KEL-DP-E 112|16	112 × 18 mm 4.409 x 0.709"	4× max. 6.5 mm/0.256" 11× max. 8.3 mm/0.327" 1× max. 12.1 mm/0.476"	43576 50576	10
		KEL-DP-E 112|21	112 × 18 mm 4.409 x 0.709"	16× max. 6.5 mm / 0.256" 4× max. 8.3 mm / 0.327" 1× max. 12.1 mm/0.476"	43578 50578	10
		KEL-DP-S 69|8	69 × 10 mm 2.717 x 0.394" Edge radii R2	8× max. 7.5 mm/0.295"	43591 50591	10

KEL-DP-E

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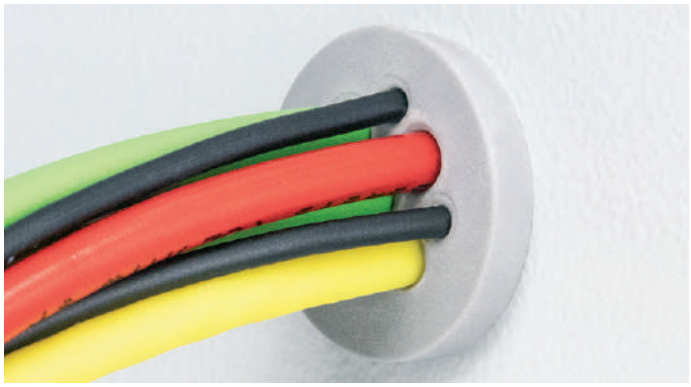
KEL-DP Round
Cable Entry Plates with IP65 Rating

KEL-DP entry plates are designed for routing cables without connectors, hoses or fibre optics in limited space.

The KEL-DP products are an easy to assemble and cost saving alternative to traditional cable glands. Simply make a small hole in the thin membrane and push the cables through. The KEL-DP round provides protection IP65/UL type 12.

The round version of the KEL-DP fits perfectly into metric cut-outs M16 to M50. A special rib ensures a centred fit in the cut-outs.

ST-B Plugs can be used for sealing pierced membranes if cables have been removed.



Advantages & benefits

- Fast and easy assembly, no tools required
- High cable density
- Very good strain relief on the cable bundle
- Cost-effective
- For wall thickness 1.5 – 4 mm / 0.039 – 0.157"

Specifications

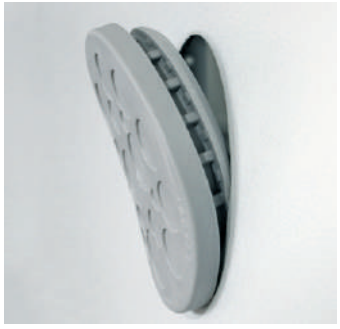
Material	Elastomer
Color	gray (similar RAL 7035)
	black
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP65 (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Operating	-40°C to +100°C (static)
temperature	-40°F to +212°F (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	Metric sizes
Plate depth	5 mm / 0.197 "
Type A:	For wall thickness 1.5 – 2.5 mm
Type B:	For wall thickness 2.8 – 4 mm

Accessories

ST-B Plugs	177
FP Flange plates	332 - 341

Also available in black

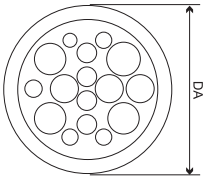
Membrane on front



Fastening

Special fixing ribs ensure a centered fit

KEL-DP Round
Cable Entry Plates



Type	Order No. Typ A	Order No. Typ B	Number of cables	Cut-out	External diameter DA	PU
KEL-DP 12|1 NEW	■ 43603	–	1× max. 6,2 mm	ø 12 mm	19 mm	10
KEL-DP 16|1	■ 43600 ■ 50535	–	1× max. 9,2 mm	ø 16 mm	23 mm	10
KEL-DP 16|3	■ 43601	–	3× max. 5,2 mm	ø 16 mm	23 mm	10
KEL-DP 16|7	■ 43602	–	7× max. 3,2 mm	ø 16 mm	23 mm	10
KEL-DP 20|1	■ 43571	–	1× max. 14 mm	ø 20 mm	27 mm	10
KEL-DP 20|4	■ 43572	–	4× max. 5,2 mm	ø 20 mm	27 mm	10
KEL-DP 20|4-1	■ 43575	–	2× max. 4,5 2× max. 8,0	ø 20 mm	27 mm	10
KEL-DP 20|5	■ 43573	–	2× max. 3,6 mm 2× max. 4,6 mm 1× max. 10,6 mm	ø 20 mm	27 mm	10
KEL-DP 20|9	■ 43574	–	4× max. 3,6 mm 5× max. 4,6 mm	ø 20 mm	27 mm	10
KEL-DP 25|4	■ 43533 ■ 50533	■ 50536 ■ 43535	4× max. 8 mm	ø 25 mm	32 mm	10
KEL-DP 25|6	■ 43531 ■ 50531	–	4× max. 5,2 mm 2× max. 9,4 mm	ø 25 mm	32 mm	10
KEL-DP 25|7	■ 43534	–	7x max. 5,2 mm	ø 25 mm	32 mm	10

KEL-DP Round
Cable Entry Plates

Type	Order No. Typ A	Order No. Typ B	Number of cables	Cut-out	External diameter DA	PU
KEL-DP 32|7	43592	43596	7x max. 8,0 mm	ø 32 mm	38 mm	10
KEL-DP 32|10	43532 50532	43560 50560	6× max. 5,2 mm 2× max. 6,4 mm 2× max. 9,4 mm	ø 32 mm	38 mm	10
KEL-DP 32|10-2	43593	43597	10x max. 6,4 mm	ø 32 mm	38 mm	10
KEL-DP 32|11	43594	43598	9x max. 5,2 mm 2x max. 8,0 mm	ø 32 mm	38 mm	10
KEL-DP 32|13	43595	43599	13x max. 5,2 mm	ø 32 mm	38 mm	10
KEL-DP 40|9	43536	43561	8× max. 9.5 mm 1× max. 11.3 mm	ø 40 mm	50 mm	10
KEL-DP 40|16	43537	43563	2× max. 5.3 mm 10× max. 6.3 mm 2× max. 9.5 mm 2× max. 11.3 mm	ø 40 mm	50 mm	10
KEL-DP 40|17	43538	43565	1× max. 4 mm 16× max. 7.2 mm	ø 40 mm	50 mm	10
KEL-DP 50|9	43554 50554	43568 50568	5× max. 7 mm 4× max. 18 mm	ø 50 mm	60 mm	10
KEL-DP 50|11	43555 50555	43569 50569	7× max. 7.2 mm 3× max. 11.2 mm 1× max. 22.5 mm	ø 50 mm	60 mm	10
KEL-DP 50|12	43551 50551	43562 50562	10× max. 9.2 mm 2× max. 11.2 mm	ø 50 mm	60 mm	10
KEL-DP 50|16	43550 50550	43564 50564	4× max. 5.3 mm 5× max. 6.3 mm 3× max. 9.5 mm 4× max. 11.3 mm	ø 50 mm	60 mm	10
KEL-DP 50|18	43553 50553	43567 50567	2× max. 4 mm 2× max. 6 mm 4× max. 7.2 mm 5× max. 9.4 mm 5× max. 12 mm	ø 50 mm	60 mm	10
KEL-DP 50|20	43552 50552	43566 50566	16× max. 6.3 mm 4× max. 9.3 mm	ø 50 mm	60 mm	10
KEL-DP 50|35	43556 50556	43570 50570	35x max. 5.2 mm	ø 50 mm	60 mm	10

ST-B
Plugs for Membranes and Multi-Range Cable Grommets

The ST-B plugs are used to seal perforated membranes of the cable entry plates (KEL-DPU, KEL-DPZ, KEL-DP, KEL-QTA), DT grommets and, in particular, the KTMBS and QTMB multi-range cable grommets. This means that entries that are no longer required can be closed. The protection rating of the cable entry remains unchanged.

The new generation of ST-B plugs has a uniform length of 30 mm to prevent the plugs from slipping out.

Advantages & benefits

- Sealing of perforated cable entry membranes which are no longer in use
- For sealing unused cable grommets

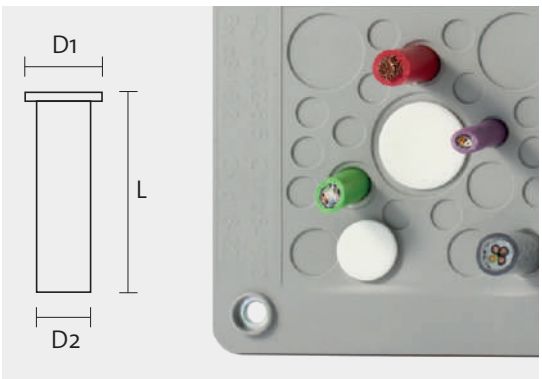
Specifications

Material	Polyamide (PA), white
Flame class	UL 94 V-0, self-extinguishing
Operating temperature	-40°C to +120°C -40°F to +248°F
Properties	Halogen-free, silicone-free

Compatible with

KEL-DPU Cable entry plates	147 - 149
KEL-DPZ Cable entry plates	152 - 163
KEL-DP Cable entry plates	168 - 176
KT-DT Cable entry grommets	86
KEL-QTA Cable entry plates	116 - 117
KTMBS multi-range cable grommets	80 - 81
QTMB multi-range cable grommets	121

Type	Order No.	Diameter D1	Diameter D2	Length L	PU
ST-B 5|30	42805	8 mm	5 mm	30 mm	25
ST-B 6|30	42806	9 mm	6 mm	30 mm	25
ST-B 7|30	42807	10 mm	7 mm	30 mm	25
ST-B 8|30	42808	11 mm	8 mm	30 mm	25
ST-B 9|30	42809	12 mm	9 mm	30 mm	25
ST-B 10|30	42810	13 mm	10 mm	30 mm	25
ST-B 11|30	42811	14 mm	11 mm	30 mm	25
ST-B 12|30	42812	15 mm	12 mm	30 mm	25
ST-B 13|30	42813	16 mm	13 mm	30 mm	25
ST-B 14|30	42814	17 mm	14 mm	30 mm	25
ST-B 15|30	42815	18 mm	15 mm	30 mm	25
ST-B 16|30	42816	19 mm	16 mm	30 mm	25
ST-B 17|30	42817	20 mm	17 mm	30 mm	25
ST-B 18|30	42818	21 mm	18 mm	30 mm	25
ST-B 19|30	42819	22 mm	19 mm	30 mm	25
ST-B 20|30	42820	23 mm	20 mm	30 mm	10
ST-B 21|30	42821	24 mm	21 mm	30 mm	10
ST-B 22|30	42822	25 mm	22 mm	30 mm	10
ST-B 23|30	42823	26 mm	23 mm	30 mm	10
ST-B 24|30	42824	27 mm	24 mm	30 mm	10
ST-B 25|30	42825	28 mm	25 mm	30 mm	10
ST-B 26|30	42826	29 mm	26 mm	30 mm	10
ST-B 27|30	42827	30 mm	27 mm	30 mm	10
ST-B 28|30	42828	31 mm	28 mm	30 mm	10
ST-B 29|30	42829	32 mm	29 mm	30 mm	10
ST-B 30|30	42830	33 mm	30 mm	30 mm	10
ST-B 31|30	42831	34 mm	31 mm	30 mm	10
ST-B 32|30	42832	35 mm	32 mm	30 mm	10
ST-B 33|30	42833	36 mm	33 mm	30 mm	10
ST-B 34|30	42834	37 mm	34 mm	30 mm	10



KEL-DPZ-KX/KL
Cable Entry Plates for Enclosures

The KEL-DPZ-KX/KL cable entry plates allow a large number of cables to be routed in a very small space and sealed twice in accordance with IP65/IP66/UL Type 12. At the same time, the cables are strain-relieved.

The KEL-DPZ-KX/KL was specially developed for Rittal KL and KX terminal boxes. Up to 72 cables can be routed with this size. The self-tapping screws (M4, thread-forming) required for installation are included in the scope of delivery.

Electrical and pneumatic lines can be assembled in a matter of seconds. The corresponding membrane is perforated and the cables are simply pushed through. Perforated membranes can be sealed with ST-B plugs.

Advantages

- Dual cable sealing acc. to IP65/IP66
- Fast and easy assembly
- High cable density
- High strain relief

Specifications

Material	Frame: Stainless steel V2A Membrane: Elastomer
Color	gray (similar RAL 7035) black (KEL-DPZ-KX/KL 72 only)
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP65 (certified acc. to EN 60529:2000-09)
Temperature	-40°C to +100°C (static) -40°F to +212°F (static)
Properties	Halogen-free, silicone-free
Mounting height	14 mm

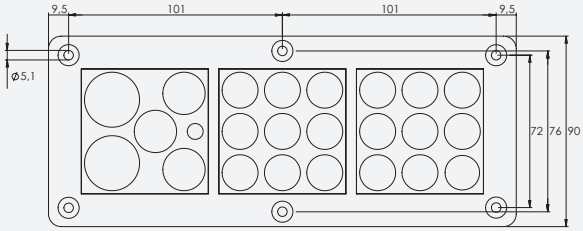
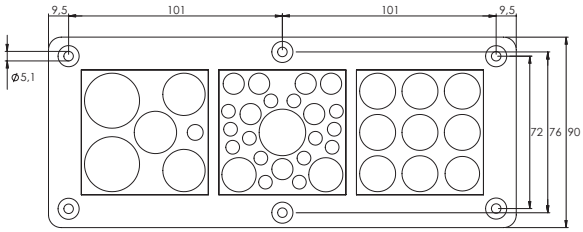
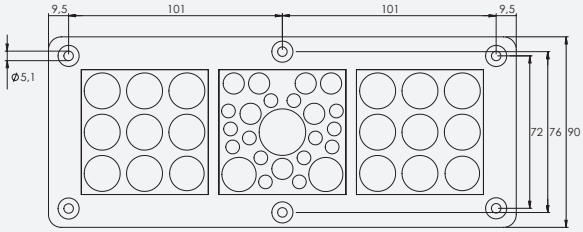
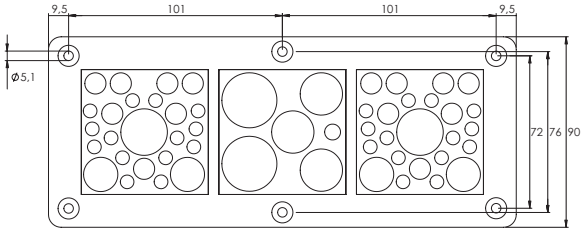
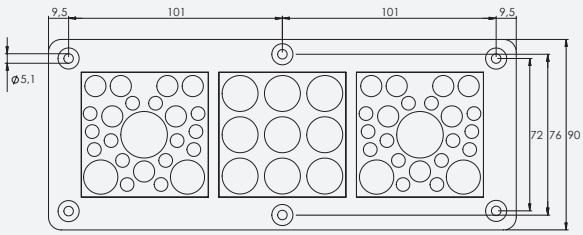
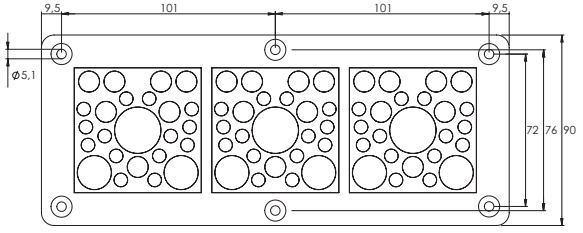
Accessories

ST-B plugs	177
FP-KX/KL	336 - 337

ST-B plug for the sealing of the perforated membrane

The KEL-DPZ series is also available as a cleanroom version, see from page 419.

KEL-DPZ-KX/KL
Cable Entry Plates for Enclosures

Description	Type	Cut-out mm	Number of cables	Order No.	PU
	KEL-DPZ-KX/KL 24	62 x 192 mm	1× 4 - 7.5 mm 18× 10 - 17 mm 3× 15 - 20 mm 2× 21 - 26 mm	43682	1
	KEL-DPZ-KX/KL 39	62 x 192 mm	14× 3.2 - 6.5 mm 1× 4 - 7.5 mm 7× 5 - 10.2 mm 2× 9 - 16.2 mm 9× 10 - 17 mm 3× 15 - 20 mm 1× 16 - 22 mm 2× 21 - 26 mm	43684	1
	KEL-DPZ-KX/KL 42	62 x 192 mm	14× 3.2 - 6.5 mm 7× 5 - 10.2 mm 2× 9 - 16.2 mm 18× 10 - 17 mm 1× 16 - 22 mm	43686	1
	KEL-DPZ-KX/KL 54	62 x 192 mm	28× 3.2 - 6.5 mm 1× 4 - 7.5 mm 14× 5 - 10.2 mm 4× 9 - 16.2 mm 2× 15 - 20 mm 2× 16 - 22 mm 2× 21 - 26 mm	43683	1
	KEL-DPZ-KX/KL 57	62 x 192 mm	28× 3.2 - 6.5 mm 14× 5 - 10.2 mm 4× 9 - 16.2 mm 9× 10 - 17 mm 2× 16 - 22 mm	43685	1
	KEL-DPZ-KX/KL 72	62 x 192 mm	42× 3.2 - 6.5 mm 21× 5 - 10.2 mm 6× 9 - 16.2 mm 3× 16 - 22 mm	43675.001 43675.101	1

KEL-DPZ-FL21
Cable entry plate for FL21 cut-out

NEW | IP54 | IP65 | UL TYPE 12

The new cable entry has been specially developed for the standard FL21 cut-out and enables cables without connectors to be routed safely and quickly.

Reliable protection thanks to double sealing

The cable entry offers a reliable protection of IP65 and is therefore ideal for use in demanding industrial environments. The secure hold of the cables ensures fewer failures and a longer service life.

One product for many applications

Depending on the version, up to 25 or 36 cables can be routed with just one cut-out. The flexible configurations allow a wide range of cable diameters to be fed through, ensuring maximum versatility, time and cost savings.

Quick and easy installation

with rivets or screws reduces labour and costs and minimises downtime.

Typical areas of application

are terminal boxes, control cabinets and other enclosure solutions where reliable and space-saving cable routing is required.

Available in gray and black, the cable entry blends seamlessly into different application environments.

User benefits

- Suitable for a wide range of cable diameters
- High tightness for maximum operational safety
- High strain relief for a long service life
- Quick and easy installation saves time and costs
- Space-saving: route up to 36 cables with just one cut-out

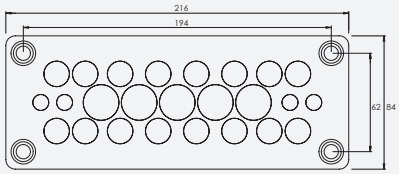
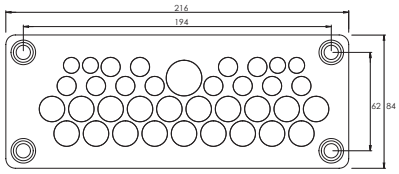
Features

- Double sealing on the cable thanks to special moulding on the back of the membrane
- Suitable for standard FL21 cut-out
- Can be mounted with screws or rivets as required
  (Screws are not included in the scope of delivery. Rivets can be ordered as an option.)

Specifications

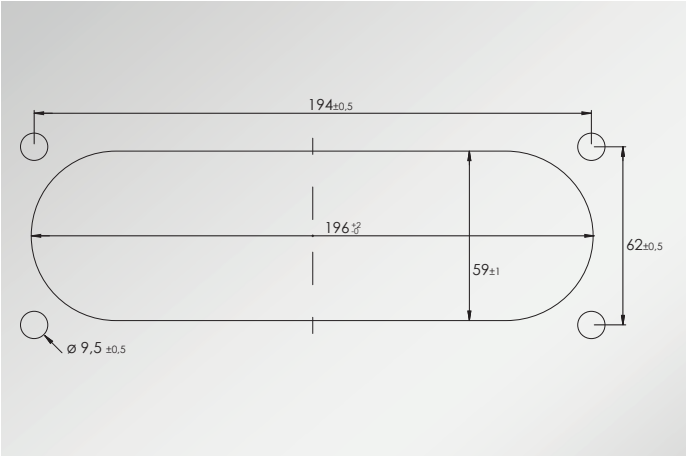
Material	Frame: Stainless steel V2A Membrane: Elastomer
Color	gray (similar RAL 7035) black (similar RAL 9005)
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54 assembly with rivets, IP65 assembly with screws
Temperature	-40°C to +100°C (static) -40°F to +212°F (static)
Properties	Halogen free, silicone free
Cut-out	FL21 standard cut-out
Height	18 mm

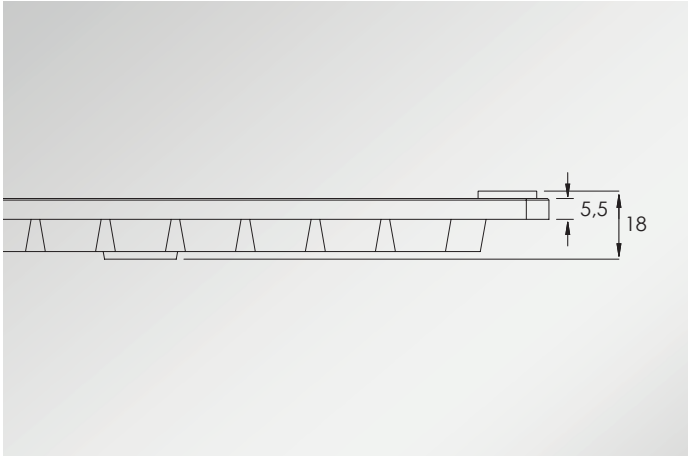
Reverse

Description	Type	Cut-out	Number of cables	Order No.	PU
	KEL-DPZ-FL21|25	FL21	4 x ø 5 – 10,2 mm 16 x ø 9 – 16,2 mm 5 x ø 16 – 22 mm	55550 55560	5
	KEL-DPZ-FL21|36	FL21	4 x ø 5 – 10,2 mm 19 x ø 9 – 16,2 mm 1 x ø 16 – 22 mm 12 x ø 7,2 – 12 mm	55551 55561	5

Rivet sets

Type	Number of rivets in a set	Color	Material	Order No.	PU
Rivet set gray	4	gray	Rivets: Polypropylen Seal: NBR	43690	1
Rivet set black	4	black	Rivets: Polypropylen Seal: NBR	43691	1





Cut-out FL21

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Cover Plugs
for Cable Entry Plates

The openings at the fastening points of the cable entry plates can be closed with the cover plugs.

The cover plugs can be used with the products of the KEL-DPZ series. They are available in black and gray.

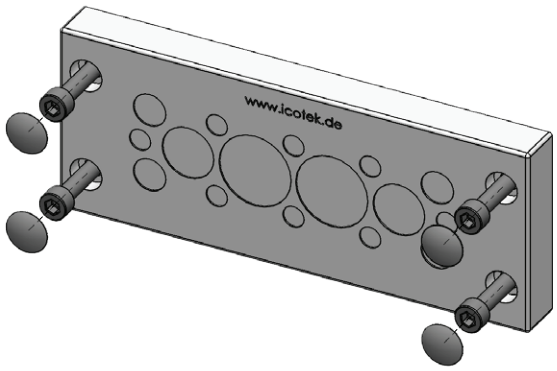
Advantages & Benefits

- Simple closing of the openings at the fastening points of the KEL-DPZ
- Smooth finish on the frame surface
- No dirt recesses

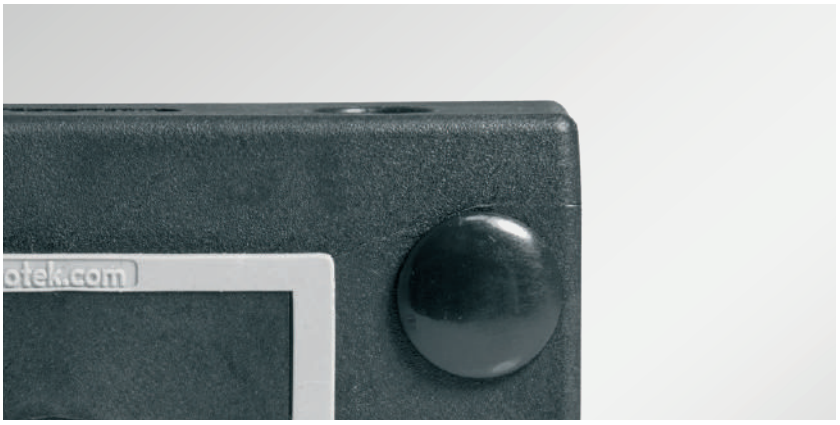
Specifications

Material	PE (Polyethylen)
Temperature	Continuous operating temperature +70°C
Properties	Higher chemical resistance

Description	Order No.	PU
Cover plugs **B** black for M5 DIN 912 Screws, for KEL-DPZ	99200	40
Cover plugs **C** gray for M5 DIN 912 Screws, for KEL-DPZ	99201	40



When fastening from the front by means of screws, the openings at the screw heads can be closed with the **cover plugs B** in black (order no. 99200) or **cover plugs C** in gray (order no. 99201). The cover plugs can only be used for M5 DIN 912 screws.



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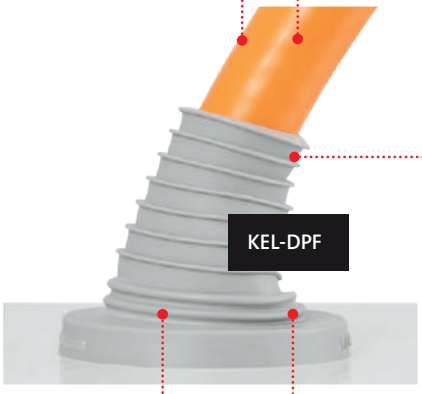
2.7 – 2.8 Flexible Cable Entry
for Cables without Connectors

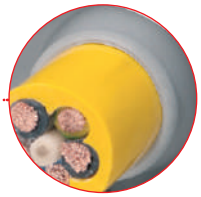
Fast and easy, partially tool-less assembly

High flexibility when routing rigid cables

KEL-SCDP-TR



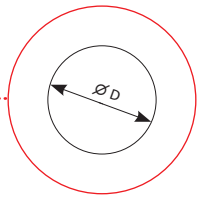
KEL-DPF



Up to IP66/IP68 rated protection

Easy peeling of the membrane rings. The peeled-off area is always round and thus seals the cable very well.

Compact, space-saving design



For metric cut-outs M25 – M85 (KEL-DPF)

Due to high elasticity also suitable for routing preassembled cable lugs/terminals.

Cable Entry Plates
for Screw-In Assembly, M25 – M63,
for Cable Diameters up to 36 mm

KEL-SCDP-TR

186 – 187

Cable Entry Plates
for Plug-In Assembly, M12 – M85,
for Cable Diameters up to 36 mm

KEL-SCDP / KEL-SCDP-RW

188 – 189

Cable Entry Grommets
for Screw-In Assembly, M25 – M85,
for Cable Diameters up to 70 mm

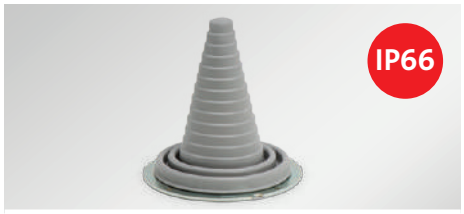
KEL-DPF

190 – 191

Cable Entry Grommets
for Extreme Conditions
for Screw-In Assembly, M25 – M75,
for Cable Diameters up to 60 mm

KEL-DPF-OD

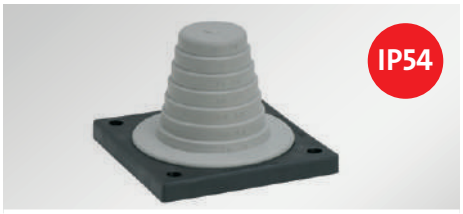
192 – 193



Cable Entry Grommets
for Screw-In Assembly,
for Cable Diameters up to 115 mm

KEL-ULTRA flex

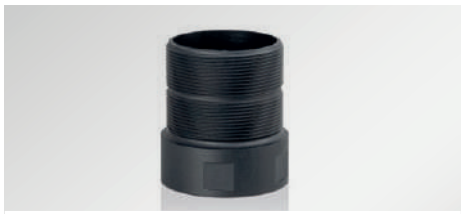
194



Cable Entry Grommets
for Screw-In Assembly,
for Cable Diameters up to 68 mm

KEL-JUMBO flex

195



Thread Extension
for Cable Glands and Cable Entry Plates
M25, M32, M50, M63

TE-M

346 – 349

Module Plates
for Cable Entry Components,
Rittal/Lohmeier

MP

326 – 327

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KEL-SCDP-TR
Cable Entry Plate for Screw Mounting with IP65 Rating

IP65 HL3 EN 45545-2

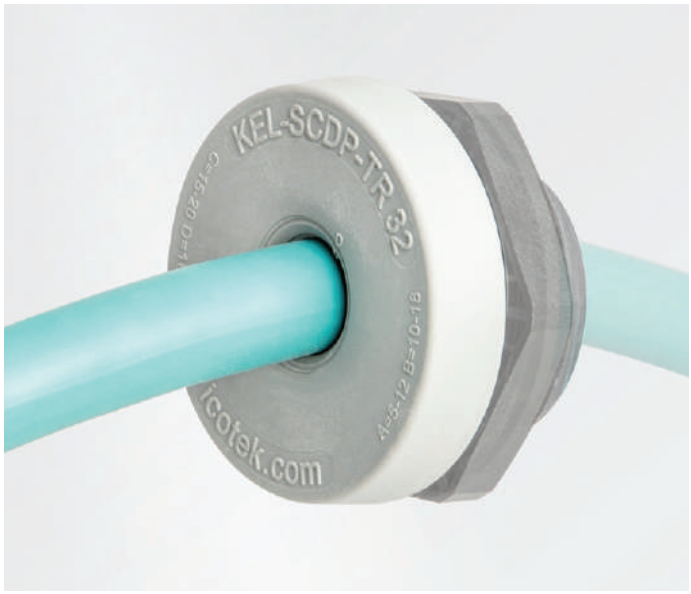
With the KEL-SCDP-TR cable entry grommet, single cables, hoses, and conduits can be routed and sealed at a rating of IP65. The KEL-SCDP-TR 63|5+1 enables the routing of up to five cables at the same time.

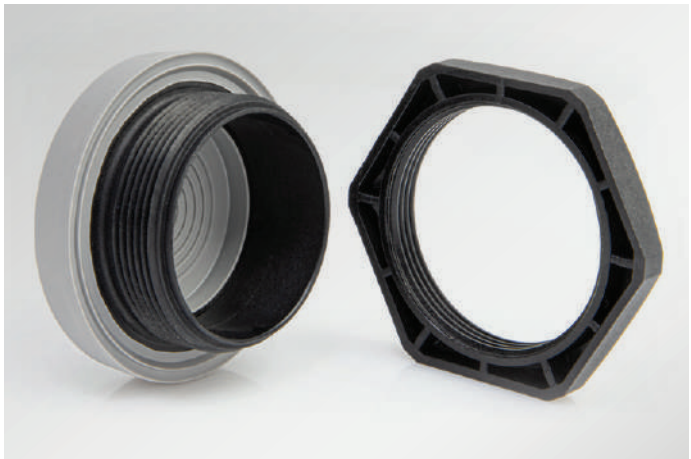
Its unique advantage is the large sealing range. The single circular membrane can be peeled away to accommodate the specific diameter of the cable or hose. For this purpose, only a small hole between the rings needs to be pierced. Then the corresponding ring can be removed. No tooling is required to peel off the membrane. The peeled-off area is always round, ensuring a secure seal around the cable or the hose.

Due to its high elasticity, the KEL-SCDP-TR is also suitable for routing pre-assembled cable lugs.

The KEL-SCDP-TR plates have a thread to fit in metric cut-outs from M25 to M63. Thus cut-outs for metric cable glands can be used.

The KEL-SCDP-TR is screwed in place with a locknut. A matching locknut is included in the delivery.





Advantages & Benefits

- Fast and secure assembly with the use of included locknut
- Very large sealing range (5 – 52 mm)
- Flexible even with rigid cables
- Metric thread (M25 – M63), suitable for metric cut-outs
- Perfect edge protection and sealing
- Circular membranes can be peeled off easily
- Locknut is included in the delivery

Specifications

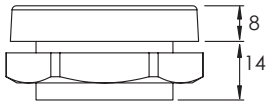
Material	Plate: Elastomer Thread: Polyamide Locknut: Polyamide
Color	gray (similar RAL 7035)
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP65 (certified acc. to EN 60529)
Temperature	-40°C to +100°C (static)
Properties	Halogen-free, silicone-free
Mounting height	8 mm
Thread length	14 mm
Wall thickness	max. 7 mm (M25 – M40) max. 6 mm (M50 – M63)
Cut-out	Metric cut-out

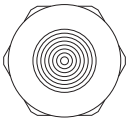
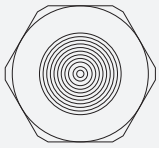
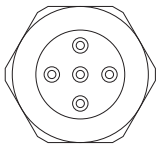
Accessories

TE-M	346 - 349

KEL-SCDP-TR
Cable Entry Plate

IP65 | ECOLAB certified | PNEUMATICS | UV ISO 4892-2A | EN 61373 | HL3 EN 45545-2 | Made in Germany | RoHS compliant



	Type	Order No.	Number of cables	Thread metric	Thread length	Max. wall thickness	External diameter	Mounting height	PU
	KEL-SCDP-TR 25	44070	1x 5 – 17 mm 0.12 – 0.67"	M25 x 1.5	14 mm 0.551"	7 mm 0.276"	39 mm 1.535"	8 mm 0.315"	10
	KEL-SCDP-TR 32	44071	1x 5 – 23 mm 0.12 – 0.90"	M32 x 1.5	14 mm 0.551"	7 mm 0.276"	44 mm 1.732"	8 mm 0.315"	10
	KEL-SCDP-TR 40	44072	1x 8 – 28 mm 0.31 – 1.10"	M40 x 1.5	14 mm 0.551"	7 mm 0.276"	52 mm 2.047"	8 mm 0.315"	10
	KEL-SCDP-TR 50	44073	1x 8 – 38 mm 0.31 – 1.50"	M50 x 1.5	14 mm 0.551"	6 mm 0.236"	62 mm 2.441"	8 mm 0.315"	10
	KEL-SCDP-TR 63 | 1	44074	1x 8 – 52 mm 0.31 – 2.05"	M63 x 1.5	14 mm 0.551"	6 mm 0.236"	75 mm 2.953"	8 mm 0.315"	10
	KEL-SCDP-TR 63 | 5+1	44078	5x 5 – 13 mm 0.12 – 0.51" 1x 50 – 52 mm 1.97 – 2.05"	M63 x 1.5	14 mm 0.551"	6 mm 0.236"	75 mm 2.953"	8 mm 0.315"	10

Can be combined with TE-M thread extension

KEL-SCDP | KEL-SCDP-RW
Cable Entry Plate for Plug-In Assembly with IP65 Rating

With the KEL-SCDP cable entry grommet, single cables, hoses, and conduits can be routed and sealed at a rating of IP65. Its unique advantage is the large sealing range.

The single circular membrane can be peeled away to accommodate the specific diameter of the cable or hose. No tooling is required to peel off the membrane. The peeled-off area is always round, ensuring a secure seal around the cable or the hose.

Another advantage is the high mounting flexibility. The KEL-SCDP can simply be plugged into cut-outs with wall thicknesses from 1.5 to 4.0 mm.

The version KEL-SCDP-RW is approved for the use in the railway technology in accordance with EN45545-2 HL3.

Advantages & benefits

- Approved for the use in the railway technology (EN 45545-2, EN 45545-3 and EN 1363-1)
- Perfect edge protection and sealing
- Circular membranes can be peeled off easily
- Easy, tool-free assembly
- Suitable for metric cut-outs M12 – M50
- Protection class up to IP65

Specifications

Material	Elastomer
Color	gray (similar RAL 7035)
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP65 (certified acc. to EN 60529)
Temperature	KEL-SCDP: -40°C to +80°C (static) KEL-SCDP-RW: -40°C to +90°C (static)
Properties	Halogen-free, silicone-free

Due to high elasticity also suitable for routing preassembled cable lugs/terminals

The single membrane rings are peeled off according to the diameter of the routed cable or hose. For this purpose, only a small hole between the rings needs to be pierced. Then the corresponding ring can be removed.

* Only valid for KEL-SCDP-RW

KEL-SCDP | KEL-SCDP-RW
Cable Entry Plate

		Type	Number of cables	Clamping range	Order No.	PU
	NEW	KEL-SCDP 12	1 max.	0 – 7.2 mm/0 – 0.28"	43477	10
	NEW	KEL-SCDP 16	1 max.	5 – 9.5 mm/0.2 – 0.37"	43478	10
	NEW	KEL-SCDP 20	1 max.	5 – 13 mm/0.2 – 0.51"	43479	10
		KEL-SCDP 25	1 max.	5 – 16 mm/0.2 – 0.63"	43480	10
		KEL-SCDP 32	1 max.	5 – 22 mm/0.2 – 0.87"	43481	10
		KEL-SCDP 40	1 max.	8 – 28 mm/0.31 – 1.10"	43482	10
		KEL-SCDP 50	1 max.	8 – 36 mm/0.31 – 1.42"	43483	10
KEL-SCDP-RW for the use in the railway technology						
	NEW	KEL-SCDP-RW 12	1 max.	0 – 7.2 mm/0 – 0.28"	43487	10
	NEW	KEL-SCDP-RW 16	1 max.	5 – 9.5 mm/0.2 – 0.37"	43488	10
	NEW	KEL-SCDP-RW 20	1 max.	5 – 13 mm/0.2 – 0.51"	43489	10
		KEL-SCDP-RW 25	1 max.	5 – 16 mm/0.2 – 0.63"	43490	10
		KEL-SCDP-RW 32	1 max.	5 – 22 mm/0.2 – 0.87"	43491	10
		KEL-SCDP-RW 40	1 max.	8 – 28 mm/0.31 – 1.10"	43492	10
		KEL-SCDP-RW 50	1 max.	8 – 36 mm/0.31 – 1.42"	43493	10

* Only valid for KEL-SCDP-RW

KEL-DPF
Cable Entry Grommet for Screw Mounting with IP66/IP68 Rating

The KEL-DPF was developed particularly for routing large or unknown sizes of cables into a switch cabinet or machine (max. cable diameter 70 mm). Due to the flexibility and unique pyramid shape, cable entry and flexible positioning is much easier compared to using conventional cable glands. Also perfect for bundling or restraining large cables.

Cutting of KEL-DPF grommets: Cable diameter less 20%. The corresponding diameters are marked on the grommet.

It is recommended that additional strain relief be provided for cables using cable ties.

Advantages & benefits

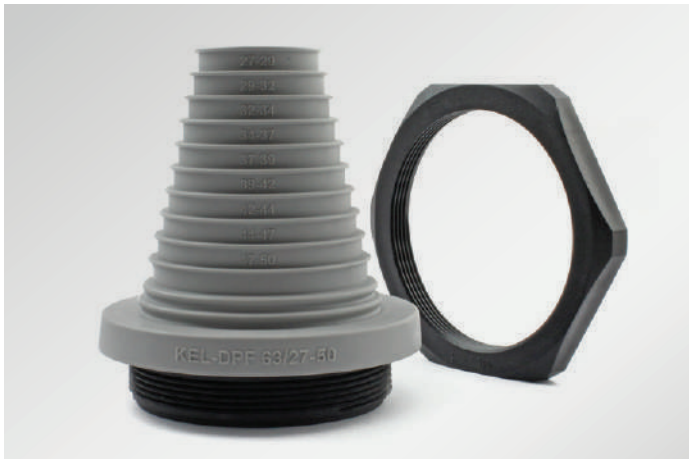
- Quick and tool-less assembly
- It is possible to install rigid cables at angles
- Suitable for metric cut-outs
- Polyamide locknuts are included in the shipment

Specifications

Material	Thread frame: Polyamide (PA) Pyramid: Elastomer
Color	gray (similar RAL 7035) black
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP66/ IP68 (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E) UL type 4X (acc. to UL 50E)
Operating Temperature	- 40°C to + 100°C (static) - 40°F to + 212°F (static)
Properties	Halogen-free, silicone-free
Thread length	11 mm / 0.43"; KEL-DPF 85|48-70: 14 mm / 0.551 "
Cut-out dimensions	Metric sizes

Accessories

FP Flanged plates	332 - 341
MP Module plates	326 - 327
TE-M	346 - 349

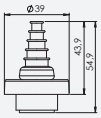
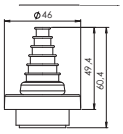
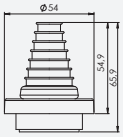
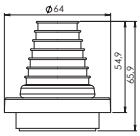
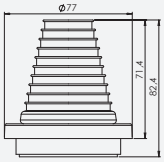
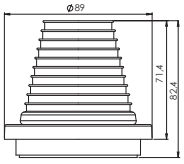
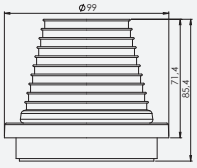


Due to high elasticity also suitable for routing preassembled cable lugs/terminals

Can be combined with TE-M thread extension

*4X for indoor use only

KEL-DPF
Cable Entry Grommet

	Type	Order No.	Thread metric	External diameter	Clamping range	PU
	KEL-DPF 25|3-12	42652 50652	M25 × 1.5	39 mm 1.535 "	3 - 12 mm 0.126 - 0.472 "	5
	KEL-DPF 32|6-18	42653 50653	M32 × 1.5	46 mm 1.811 "	6 - 18 mm 0.236 - 0.709 "	5
	KEL-DPF 40|12-27	42654 50654	M40 × 1.5	54 mm 2.126 "	12 - 27 mm 0.472 - 1.063 "	5
	KEL-DPF 50|22-36	42655 50655	M50 × 1.5	64 mm 2.52 "	22 - 36 mm 0.866 - 1.417 "	5
	KEL-DPF 63|27-50	42656 50656	M63 × 1.5	77 mm 3.031 "	27 - 50 mm 1.063 - 1.969 "	5
	KEL-DPF 75|39-60	42657 50657	M75 × 1.5	89 mm 3.504 "	39 - 60 mm 1.535 - 2.362 "	1
	KEL-DPF 85|48-70	42658 50658	M85 × 2	99 mm 3.898 "	48 - 70 mm 1.89 - 2.756 "	1

*4X for indoor use only

KEL-DPF-OD
Cable Entry Grommets for Extreme Conditions

NEW | IP66 | IP68 | UL TYPE 12 | UL TYPE 4X | UL 746C | XTREME LINE

Maximum resistance for extreme conditions! The new KEL-DPF-OD series has been specially developed for applications where extreme environmental conditions are part of everyday life.

The KEL-DPF-OD is ideally suited for applications in which cable entries are permanently exposed to strong UV radiation, weathering and temperature fluctuations. Compared to standard versions, it offers increased material resistance and extended service life in outdoor environments. Thanks to its approvals, it is particularly suitable for the use in photovoltaic systems (UL 6703, UL 6703A, UL 3703, UL 1703).

The flexible design of the cone makes it much easier to insert and position the cable than with conventional cable glands.

Reliable protection in extreme climatic environments

Maximum protection against weather conditions such as rain, snow, UV radiation, dust and extreme temperatures.

F1 listing (UV and weather resistance according to UL 746C)

The long-term durability means an increased service life without embrittlement or material fatigue.

Quick and easy installation

Saves time and money during installation and maintenance.

High tightness and strain relief

The high protection ratings ensure the performance of the cable installation, especially in outdoor areas.

User benefits

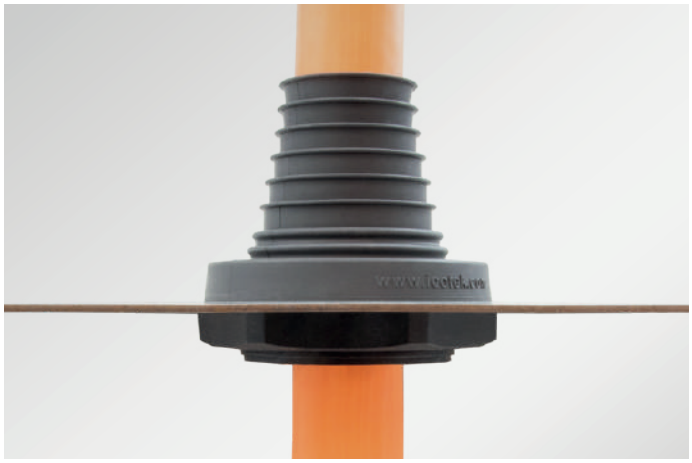
- Quick installation and secure fit thanks to screw connection with a locknut
- Very large variable sealing range (3 – 60 mm)
- Angled insertion of inflexible cables is possible

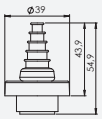
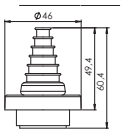
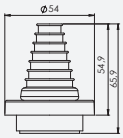
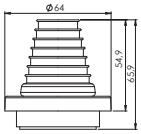
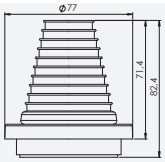
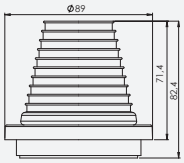
Features

- Certified protection IP66/IP68 (in accordance with EN 60529:2014-09)
- Suitable for metric cut-outs M25 – M75
- Locknut is included in the shipment

Specifications

Material	Polyamide (PA), TPE with UV resistance F1
Color	■ anthracite (similar RAL 7016)
Flame class	UL 94 V-1, self-extinguishing
IP rating	IP66/IP68 (certified according to EN 60529:2014-09)
Temperature	-40°C to +120°C (static)
Properties	Silicone free
Thread length	11 mm
Cut-out	Metric sizes



	Type	Thread metric	External diameter	Clamping range	Order No.	PU
	KEL-DPF 25|3-12 OD	M25 × 1.5	39 mm 1.535 "	3 – 12 mm 0.126 – 0.472 "	■ 62652	5
	KEL-DPF 32|6-18 OD	M32 × 1.5	46 mm 1.811 "	6 – 18 mm 0.236 – 0.709 "	■ 62653	5
	KEL-DPF 40|12-27 OD	M40 × 1.5	54 mm 2.126 "	12 – 27 mm 0.472 – 1.063 "	■ 62654	5
	KEL-DPF 50|22-36 OD	M50 × 1.5	64 mm 2.52 "	22 – 36 mm 0.866 – 1.417 "	■ 62655	5
	KEL-DPF 63|27-50 OD	M63 × 1.5	77 mm 3.031 "	27 – 50 mm 1.063 – 1.969 "	■ 62656	5
	KEL-DPF 75|39-60 OD	M75 × 1.5	89 mm 3.504 "	39 – 60 mm 1.535 – 2.362 "	■ 62657	1

KEL-ULTRA Flex
Cable Entry Grommets

The KEL-ULTRA flex is designed as a cable entry grommet for any large cable or conduit that is difficult to manage. The KEL-ULTRA flex comes in two sizes and is ideal for routing and sealing cables and conduits with a diameter from 25 to 115 mm. Due to the high flexibility of the elastomer pyramid, inserting large, thick cables with KEL-ULTRA flex is easier than using standard cable glands.

After inserting the cable or conduit, the KEL-ULTRA flex is quickly and easily mounted with the metal ring and screws. This ring enables a circular fixing and sealing of the grommet at the enclosure wall. The ring is supplied with each KEL-ULTRA flex. Cutting of grommets: Cable diameter less 25%. It is recommended that additional strain relief be provided for cables as part of the installation.

Advantages & benefits

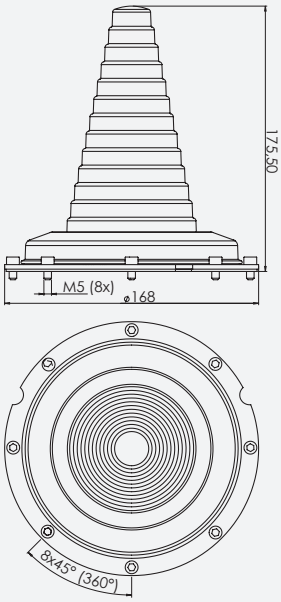
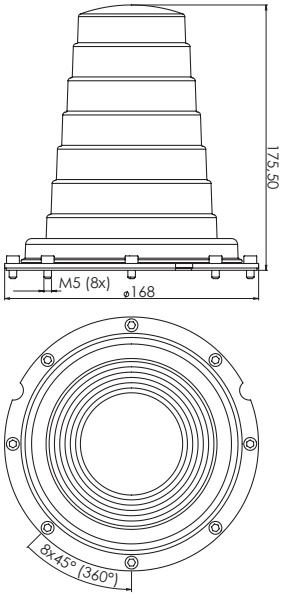
- Quick assembly
- Grommets allow easy orientation and seal of rigid cables
- IP66/up to UL type 12 rating

Specifications

Material	Pyramid: Elastomer Fixing metal ring: Stainless Steel
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP66, when fastened with 8 screws (certified acc. to EN 60529)
UL type rating	UL type 12 (acc. to UL 50E)
Operating temperature	- 40°C to + 100°C (static) - 40°F to + 212°F (static)
Properties	Halogen-free, silicone-free
Cut-out dimension	Round, ø-cable +30%, max. ø 140 mm / 5.512"

Accessories

MP Module plates	326 - 327
BPM Blank plates	343

Description	Type	Order No.	Sealing range	PU
	**KEL-ULTRA flex 1** incl. fixing screws	**42630**	**25 - max. 90 mm cable diameter 0.984 - max. 3.543"**	**1**
	**KEL-ULTRA flex 2** incl. fixing screws	**42631**	**75 - max. 115 mm cable diameter 2.953 - max. 4.528"**	**1**

KEL-JUMBO Flex
Cable Entry Grommets

The KEL-JUMBO flex is a flexible cable entry grommet for cables without connectors with a diameter range from 27 – 68 mm.

They are ideal for the routing supply cables into the switch cabinets.

Cutting of KEL-JUMBO flex grommets:
Cable diameter less 25%. The corresponding diameters are marked on the grommet.

It is recommended that additional strain relief be provided for cables as part of the installation.

Advantages & benefits

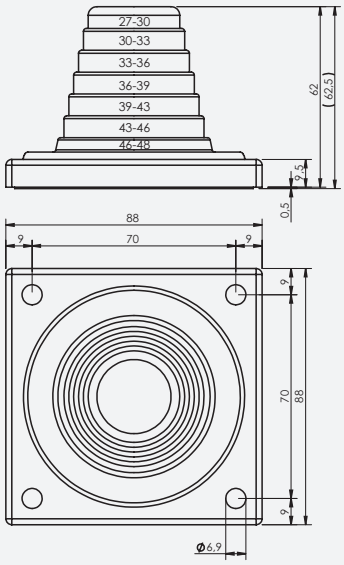
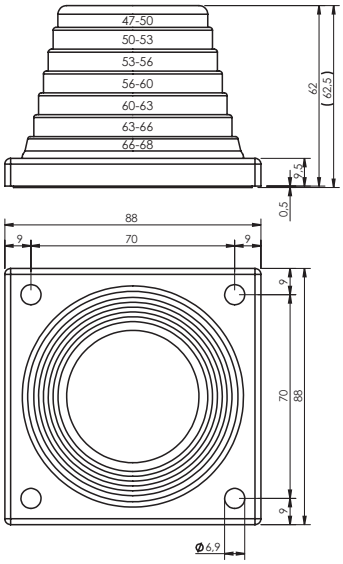
- Quick assembly
- Grommets allow dynamic and flexible movement of rigid cables
- Compact installation area (88 × 88 mm / 3.465 x 3.465")

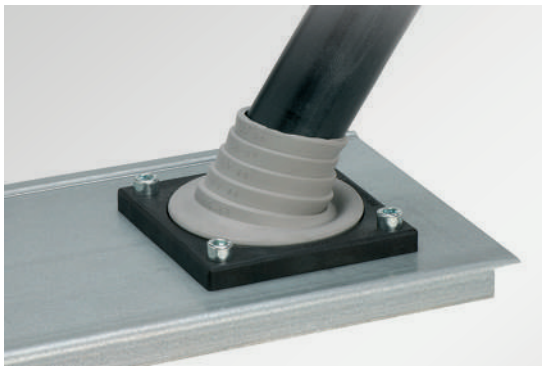
Specifications

Material	Frame: Polyamide (PA) Pyramid: Elastomer
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54
UL type rating	UL type 12 (acc. to UL 50E)
Operating temperature	-40°C to +100°C (static) - 40°F to + 212°F (static)
Properties	Halogen-free, silicone-free
Cut-out dimensions	Round, ø-cable +20%

Accessories

MP Module plates	326 - 327
BP Blank plates	343

Description	Type	Order No.	Clamping range	PU
	KEL-JUMBO flex 27-48	42614	27 - 48 mm 1.063 - 1.89 "	1
	KEL-JUMBO flex 47-68	42616	47 - 68 mm 1.85 - 2.677 "	1



RINA · DNV · HL3 EN 45545-2 · EN 61373 · EN 62444 · UV ISO 4892-2A · IEC 61914 · EN ISO 14644 · PNEUMATICS · ECOLAB certified · RoHS compliant · Made in Germany

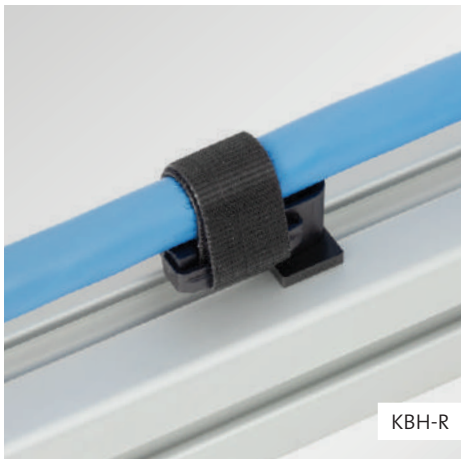
Strain Relief
and Cable Management

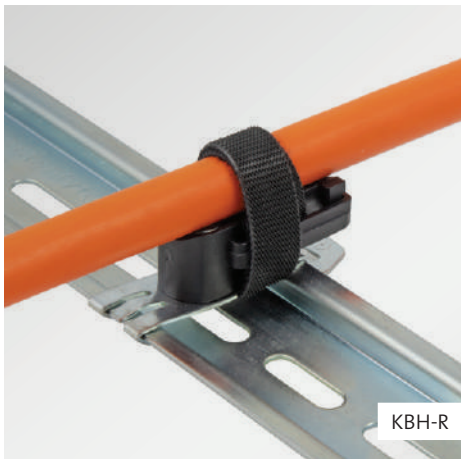
CCL

ZL

ZL 03 | 04 | 05

KBH-S


KBH-R


KBH-R

KB

MSMC

Strain Relief and Cable Management 3
3.1
3.2
3.3

Best secured and structured: Strain relief and cable routing

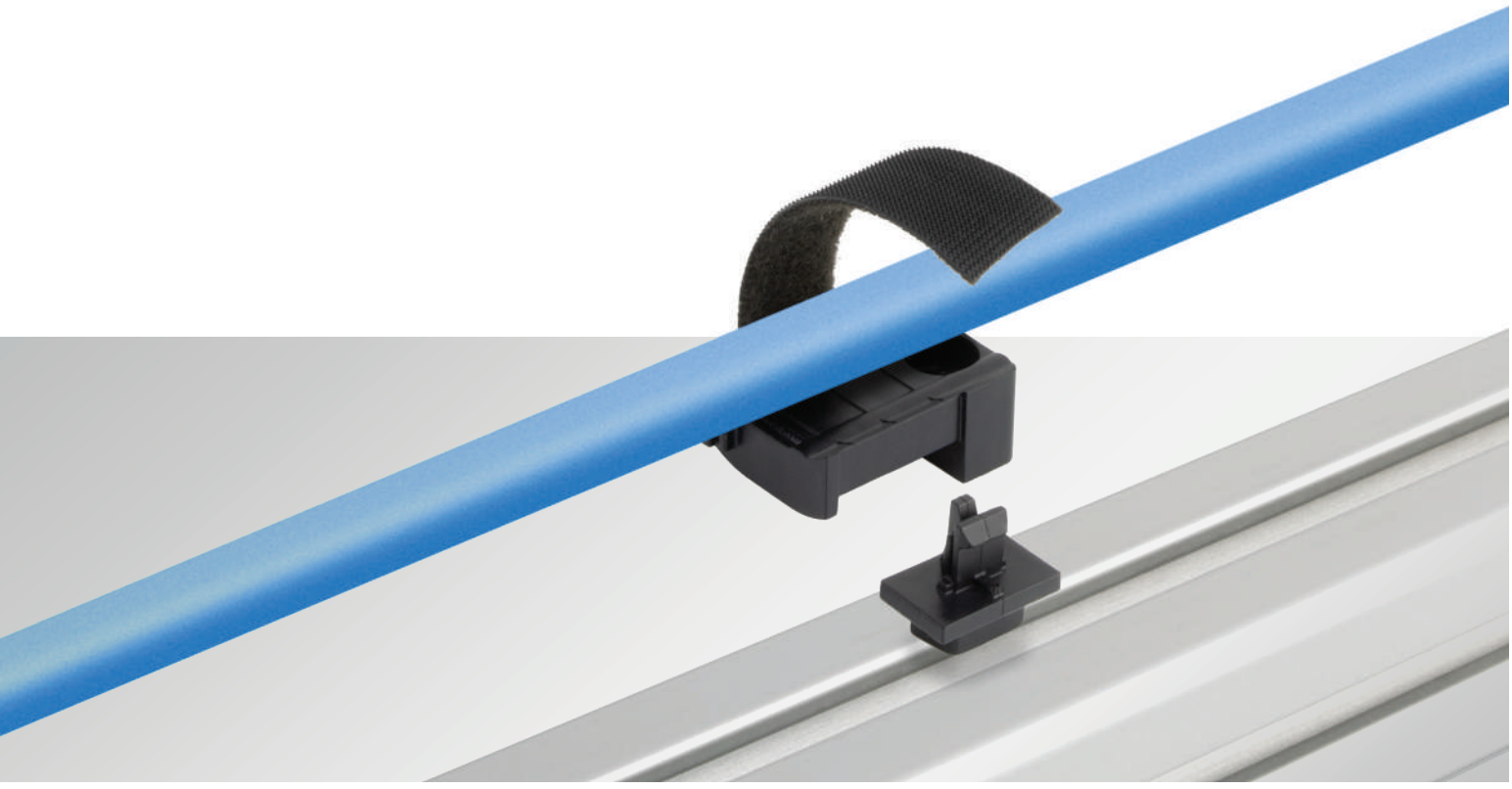
With icotek's universal strain relief and cable routing systems, cables, wires and hoses can be quickly, safely and cleanly assembled and strain relieved in accordance with EN 62444. This is possible under both static and dynamic loads.

The possible applications range from routing cables on machines, control cabinets and enclosures to cable carriers.

Various assembly options, e.g. for top-hat rail, C-rail or direct mounting, offer a wide range of possible applications. The cables are mounted using standard cable ties.

Cable ties with hook-and-loop fasteners are an increasingly common fixing mode for cables. Various holders serve as holders for hook-and-loop fasteners, which can be mounted quickly and easily in a variety of ways.

The modular stackable cable clamp MSMC is used for cable routing and strain relief, especially for cables with large diameters and large bending radii, according to IEC 61914.



ProductFinder

Product range strain relief, MSMC	Strain relief	Strain relief acc. to EN 62444	IEC 61914	Screw assembly	Assembly on DIN rails	Assembly on C-rails	Page
CCL | CCL-RK	●					●	202 – 203
ZL	●	●		●			204
ZL-AB / ZL-MS	●	●		●			205
ZL 03 / 04 / 05	●	●		●			206
KZL	●	●			●	●	207
SF|ZL	●	●			●		208
MSMC	●		●	●		●	226 – 231

Product range cable management	compatible with	
KBH-S M5	universal	214
KBH-R R MS	Rittal punched section and punched rail	215
KBH-R M G8	MiniTec profile with 8 mm groove	216
KBH-R M-I G8	MiniTec, Item profile with 8 mm groove	216
KBH-R B-R G8	Bosch Rexroth profile with 8 mm groove	217
KBH-R B-R G10	Bosch Rexroth profile with 10 mm groove	217
KBH-R I G6	Item profile with 6 mm groove	218
KBH-R May-G8	Maytec PG40 profile with 8 mm groove	218
KBH-R P80/20	80/20 profile	219
KBH-R SF-M4	35 mm top hat DIN rail	220
KBH-R 12-SC	C-rails with an opening dimension of 16 mm	220
KBH-R 12-C	C-rails with an opening dimension of 16 mm	220
KBH-R 9,5	19" system punching 9.5 x 9.5 mm	221
KBH-KS	universal, self-adhesive	221
KBH-S	23 × 23 mm mounting rail	214
KBH-SB	universal	224
KBH-R	23 × 23 mm mounting rail systems for Rittal VX25	224
KBH-R-TX	Telex rail	224
KBH-RBA	drill-hole ø 6 mm	224
KBH-RBB	drill-hole ø 6.5 mm	224
KLKB	universal	224
KLB	universal	224

Further details on certifications and technical specifications can be found on the product pages.

3.1 Systems for Strain Relief

Space-saving solution for mounting on C-rails

High cable density, multilayer mounting possible

Fast and easy, partially tool-less mounting

Wide mounting type variety: TS35 rail / C-rail snap mount, screw mount

Available in various sizes

Secure hold of the cable ties and cables, strain relief acc. to EN 62444

EN 62444

Cable Clamp
for C-Rail Mount

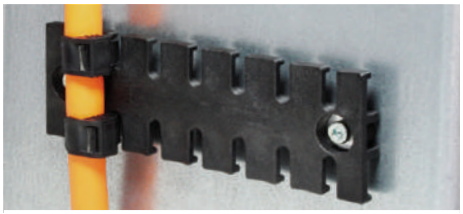
CCL | CCL-RK | UCL

202 – 203

Strain Relief Plates
for Screw Mount

ZL

204



Strain Relief Plates
for Screw Mount, with Bushings

ZL-AB / ZL-MS

205

Strain Relief Plates
for Screw Mount, for Various Cable Diameters

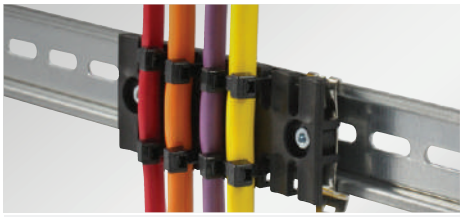
ZL 03 | 04 | 05

206

Strain Relief Plates
for TS35 Rail / C-Rail Snap Mount

KZL

207



Strain Relief Plates
for TS35 Rail Snap Mount

SF|ZL

208

Spacers
for Multilayer Mounting of Strain Relief Plates

DH

206

EMC Strain Relief Plates

KAFM-EMC

278

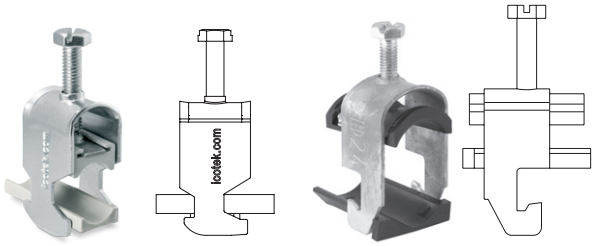
Shield Plate for ZL Strain Relief Plates

ZL|SB-EMC

279

CCL | CCL-RK
Cable Clamp for C-rails

RoHS compliant



CCL *UCL*

The cable clamps are characterized by a high clamping range and great flexibility. Ideally suited for strain relief on the C-rail for opening dimensions 16 – 17 mm. It offers flexible clamping ranges from 6 mm to 64 mm.

The counter trough integrated in the cable clamp is secured by a locking mechanism and cannot slip out of the cable clamp under tensile load.

Advantages & Benefits

- Quick and easy assembly, particularly user-friendly with a textured knob
- Tool-less and space-saving assembly
- Large variety of clamping areas from 6 to 64 mm
- High packing density
- For mounting on all common C-rails with 16 – 17 mm opening dimensions

Specifications

Material	Galvanized steel
Material RKM6	Thermoplastic
Material counter trough	Polyamide (PA)

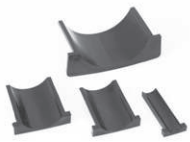
Accessories

EMC shield clamps for 30 mm C-rails 256 - 259

Type	Clamping range		Order No.	PU
CCL 6-13	6 – 13 mm 0.236 – 0.512"		32000	25
CCL 12-19	12 – 19 mm 0.472 – 0.748"		32001	25
CCL 18-23	18 – 23 mm 0.709 – 0.906"		32002	25
CCL 22-32	22 – 32 mm 0.866 – 1.260"		32003	25
CCL 30-38	30 – 38 mm 1.181 – 1.496"		32004	25
CCL 38-42	38 – 42 mm 1.496 – 1.654"		32005	25
CCL 42-50	42 – 50 mm 1.654 – 1.969"		32006	25
CCL 50-64	50 – 64 mm 1.969 – 2.52"		32007	25
CCL-RK 6-13 Cable clamp with textured knob	6 – 13 mm 0.236 – 0.512"	NEW	32000.100	25
CCL-RK 12-19 Cable clamp with textured knob	12 – 19 mm 0.472 – 0.748"	NEW	32001.100	25
CCL-RK 18-23 Cable clamp with textured knob	18 – 23 mm 0.709 – 0.906"	NEW	32002.100	25
CCL-RK 22-32 Cable clamp with textured knob	22 – 32 mm 0.866 – 1.260"	NEW	32003.100	25
RKM6 textured knob for CCL, CC-LFC and screws		NEW	99220	25
UCL 8-12	8 – 12 mm 0.315 - 0.472"		32020	25
UCL 12-16	12 – 16 mm 0.472 - 0.63"		32021	25
UCL 16-20	16 – 20 mm 0.63 - 0.787'		32022	25
UCL 20-24	20 – 24 mm 0.787 - 0.945"		32023	25
UCL 24-28	24 – 28 mm 0.945 - 1.102"		32024	25
UCL 28-32	28 – 32 mm 1.102 - 1.26"		32025	25
UCL 32-36	32 – 36 mm 1.26 - 1.417"		32026	25
UCL 36-40	36 – 40 mm 1.417 - 1.575"		32027	25
UCL 40-44	40 – 44 mm 1.575 - 1.732"		32028	25
UCL 44-48	44 – 48 mm 1.732 - 1.89"		32029	25
UCL 48-52	48 – 52 mm 1.89 - 2.047"		32030	25
UCL 52-56	52 – 56 mm 2.047 - 2.205"		32031	25
UCL 56-60	56 – 60 mm 2.205 - 2.362"		32032	25
UCL 60-64	60 – 64 mm 2.362 - 2.52"		32033	25

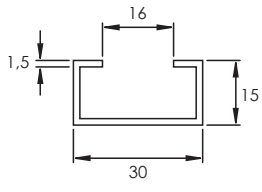
CCL
Plastic Counter Trough (Spare Part)

RoHS compliant

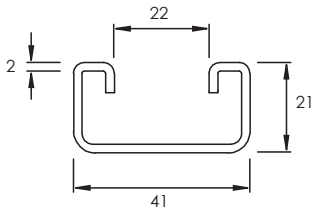


Plastic counter trough (spare part)

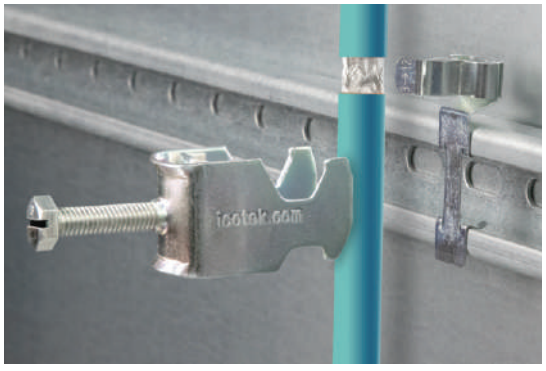
Type	suitable for cable clamp	Order No.	PU
Counter trough Y 6/12	CCL 6-13	99215	50
Counter trough Y 12/18	CCL 12-19	99216	50
Counter trough Y 16/22	CCL 18-23	99217	50
Counter trough Y 22/38	CCL 22-32, CCL 30-38, CCL 38-42	99218	50
Counter trough Y 42/64	CCL 42-50, CCL 50-64	99219	50
GGWUCL 8-12	UCL 8-12	99230	50
GGWUCL 12-16	UCL 12-16	99231	50
GGWUCL 16-20	UCL 16-20	99232	50
GGWUCL 20-24	UCL 20-24	99233	50
GGWUCL 24-28	UCL 24-28	99234	50
GGWUCL 28-32	UCL 28-32	99235	50
GGWUCL 32-36	UCL 32-36	99236	50
GGWUCL 36-40	UCL 36-40	99237	50
GGWUCL 40-48	UCL 40-44, UCL 44-48	99238	50
GGWUCL 48-56	UCL 48-52, UCL 52-56	99239	50
GGWUCL 56-64	UCL 56-60, UCL 60-64	99240	50



C-rail dimensions (mm)



Unistrut strut channel opening dimension 22 mm



LFC|MSKL and CCL

Applications on the C-Rail with cable clamp CCL

ZL
Strain Relief Plates for Screw Assembly

The strain relief plate ZL is used for static or dynamic applications for organizing and securing cables on machines, control panels or cable carriers.

The design of the strain relief unit provides secure strain relief according to EN 62444. Mount of the cables or pneumatic tubing is easily done using cable ties.

For multilayer installation please use DH spacers.

Advantages & Benefits

- Strain relief according to EN 62444
- Easy assembly
- Cost-effective
- High cable density
- Wide variety of mounting options
- Vibration proof

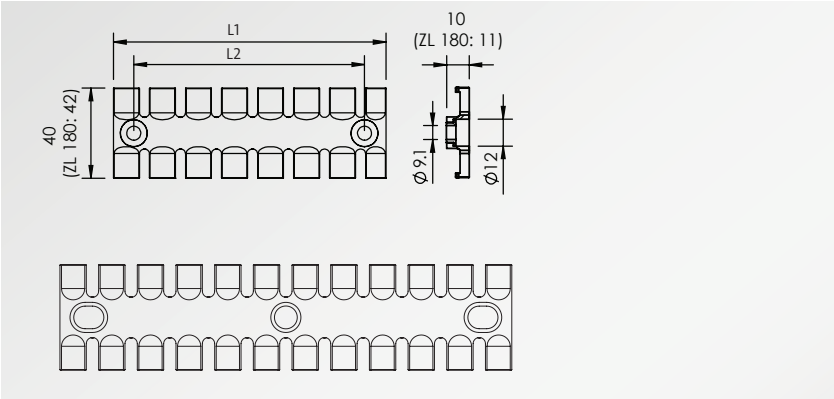
Specifications

Material	Polyamide (PA)
Flame class	UL 94 V-0
Operating temperature	- 40°C to + 140°C (static) - 40°F to + 284°F (static)
Properties	Halogen-free, silicone-free

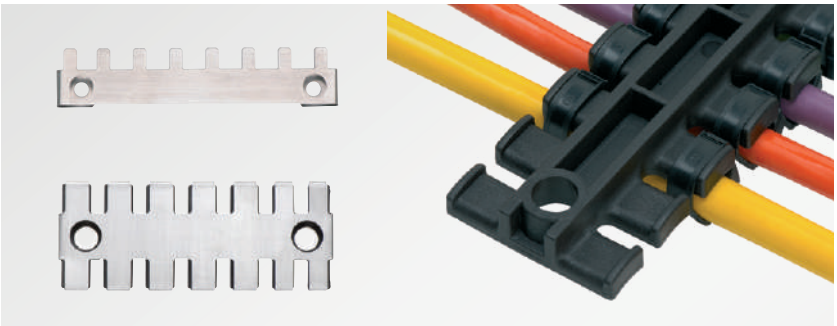
Accessories

DH Spacers	206
ZL|SB-EMC Shield plates	247
Mounting feet	279

Type	Order No.	Length L1	Length L2	No. of teeth	PU
ZL 39	32222	38.5 mm 1.516 "	19.5 mm 0.768 "	3	10
ZL 60	32224	59.5 mm 2.343 "	43.5 mm 1.713 "	4	10
ZL 70	32226	69.1 mm 2,72 "	43.5 mm 1.713 "	5	10
ZL 87	32228	86.5 mm 3.406 "	68 mm 2.677 "	6	10
ZL 103	32230	102.5 mm 4.035 "	84 mm 3.307 "	7	10
ZL 121	32232	121 mm 4.764 "	102.5 mm 4.035 "	8	10
ZL 140	32234	139.5 mm 5.492 "	121 mm 4.764 "	9	10
ZL 180	32236	180 mm 7.087 "	157 mm 6.181 "	12	10

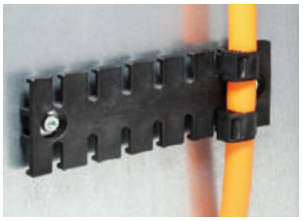


ZL 180



ZL|SB-EMV *ZL*

ZL-AB | ZL-MS
Strain Relief Plates for Screw Assembly



The strain relief plate ZL-AB / ZL-MS is used for static or dynamic applications for organizing and securing cables on machines, control panels or cable carriers.

By using aluminum / brass nuts for the screw holes, a better fit of the strain relief plate is achieved, even in high vibration environments.

Advantages & Benefits

- Strain relief according to EN 62444
- Easy assembly
- Cost-effective
- High cable density
- Wide variety of mounting options
- Vibration proof

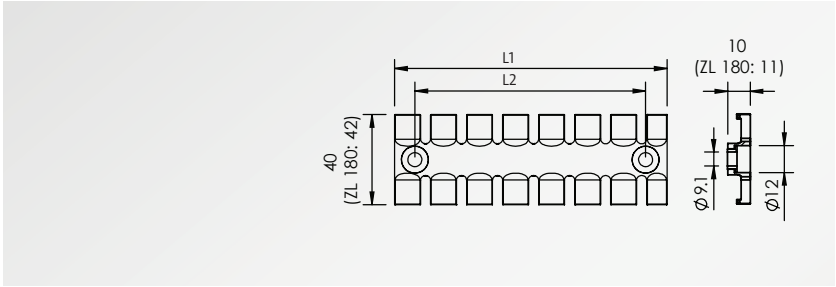
Specifications

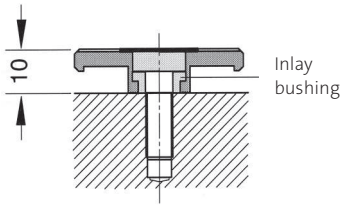
Material	ZL: Polyamide (PA) Bushing: Aluminum (ZL-AB) Brass (ZL-MS)
Flame class	UL 94 V-0
Operating temperature	- 40°C to + 140°C (static) - 40°F to + 284°F (static)
Properties	Halogen-free, silicone-free

Accessories

ZL|SB-EMC Shield plates	247
Mounting feet	279

Type	Order No. for M4 screws	Order No. for M5 screws	Order No. for M6 screws	Length L1	Length L2	No. of teeth	PU
ZL 39 AB ZL 39 MS	32270	32280 32360	32290	38.5 mm 1.516 "	19.5 mm 0.768 "	3	10
ZL 60 AB ZL 60 MS	32271	32281 32361	32291	59.5 mm 2.343 "	43.5 mm 1.713 "	4	10
ZL 70 AB ZL 70 MS	32272	32282 32362	32292	69.1 mm 2,72 "	43.5 mm 1.713 "	5	10
ZL 87 AB ZL 87 MS	32273	32283 32363	32293	86.5 mm 3.406 "	68 mm 2.677 "	6	10
ZL 103 AB ZL 103 MS	32275	32284 32364	32294	102.5 mm 4.035 "	84 mm 3.307 "	7	10
ZL 121 AB ZL 121 MS	32277	32285 32365	32295	121 mm 4.764 "	102.5 mm 4.035 "	8	10
ZL 140 AB ZL 140 MS	32274	32286 32366	32296	139.5 mm 5.492 "	121 mm 4.764 "	9	10
ZL 180 AB ZL 180 MS	32276	32287 32367	32297	180 mm 7.087 "	157 mm 6.181 "	12	10





Inlay bushings also available in brass

ZL 03 | 04 | 05
Strain Relief Plates for Screw Assembly for various Cable Diameters

Strain relief plates ZL feature different comb widths. Thus providing a multi-purpose product for various cable sizes. The design of the strain relief unit provides secure strain relief according to EN 62444. Mount of the cables or pneumatic tubing is easily done using cable ties.

Advantages & Benefits

- Strain relief according to EN 62444
- Easy assembly
- Cost-effective
- High cable density
- Wide variety of mounting options
- Vibration proof

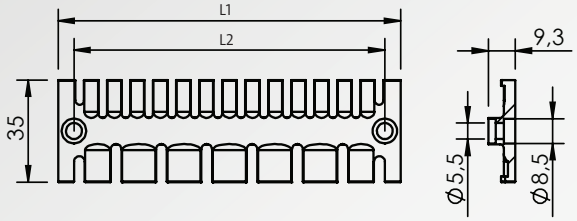
Specifications

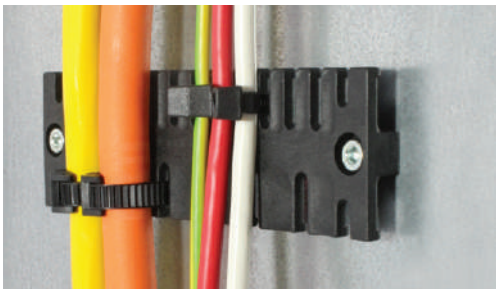
Material	Polyamide (PA)
Flame class	UL 94 V-0
Operating temperature	- 40°C to + 140°C (static) - 40°F to + 284°F (static)
Properties	Halogen-free, silicone-free

Accessories

Mounting feet	247

Type	Order No.	Length L1	Length L2	No. of teeth	PU
ZL 03	32112	63.4 mm 2.496 "	42 mm 1.654 "	4|7	10
ZL 04	32114	95 mm 3.74 "	74.5 mm 2.933 "	6|11	10
ZL 05	32116	119 mm 4.685 "	108 mm 4.252 "	7|13	10





DH Spacers

Due to DH Spacers strain relief plates can be mounted in multi-layers to achieve an increase of the cable density.

Advantages & Benefits

- Increase of cable density

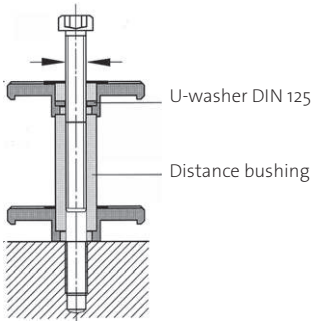
Specifications

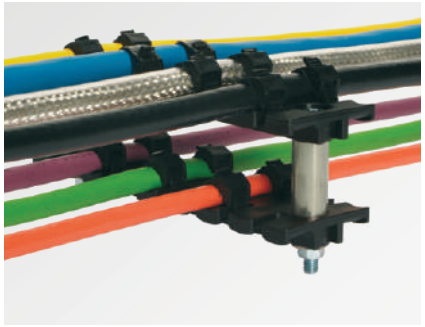
Material Aluminum

Compatible with

ZL Strain relief plates	204
ZL 03|04|05 Strain relief plates	206

Type	Order No.	Fits with	Length	Diameter inner	Diameter outer	PU
DH 30	32251	ZL 03 | 04 | 05	30 mm 1.181 "	5.2 mm 0.205 "	8.5 mm 0.335 "	10
DH 32	32252	ZL	32 mm 1.26 "	6.2 mm 0.244 "	12 mm 0.472 "	10





KZL
Strain Relief Plates for Mounting Rails

The strain relief plate KZL is used for static or dynamic applications for organizing and securing cables on machines, control panels or cable carriers.

The design of the strain relief unit provides secure strain relief according to EN 62444. Mount of the cables or pneumatic tubing is easily done using cable ties.

KZL Strain relief plates can be mounted on 30 mm DIN rails (C-rails) and TS35 rails.

Advantages & Benefits

- Strain relief according to EN 62444
- Easy assembly
- Cost-effective
- High cable density
- Wide variety of mounting options
- Vibration proof

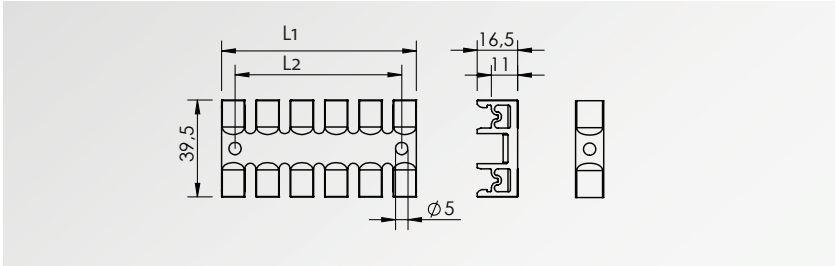
Specifications

Material	Polyamide (PA)
Flame class	UL 94 V-0
Operating temperature	- 40°C to + 140°C (static) - 40°F to + 284°F (static)
Properties	Halogen-free, silicone-free

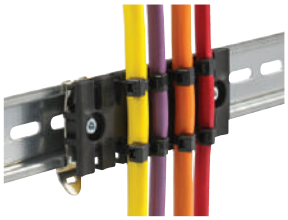
Accessories

Mounting feet	247

Type	Order No.	Length L1	Length L2	No. of teeth	PU
KZL 11	32250	11.5 mm 0.453 "	–	1	10
KZL 39	32260	38.5 mm 1.516 "	28.3 mm 1.114 "	3	10
KZL 80	32262	79.5 mm 3.13 "	68 mm 2.677 "	6	10
KZL 140	32264	139.5 mm 5.492 "	128.1 mm 5.043 "	9	10



SF|ZL
Strain Relief Plates for TS35 Rail



The strain relief plate SF|ZL is used for assembly on 35 mm DIN rails. It can be used for strain relief of cables and conduits.

The SF|ZL range is based upon the strain relief plate ZL, which is mounted on snap feet for TS35 rails.

Advantages & Benefits

- Strain relief according to EN 62444
- Easy assembly
- Cost-effective
- High cable density
- Wide variety of mounting options

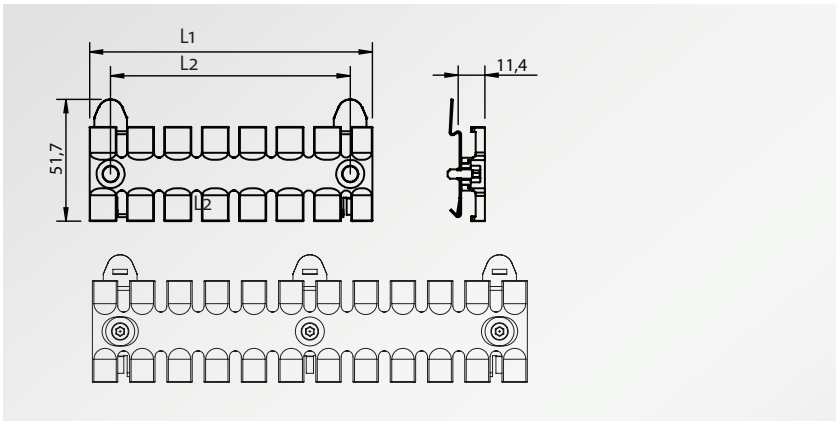
Specifications

Material	ZL: Polyamide (PA) SF-foot: Spring steel
Flame class	UL 94 V-0
Operating temperature	- 40°C to + 140°C (static) - 40°F to + 284°F (static)
Properties	Halogen-free, silicone-free

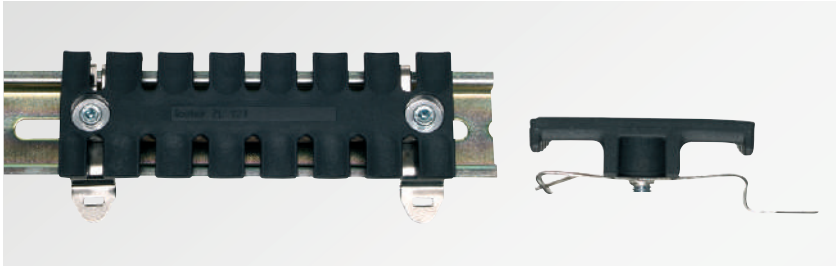
Accessories

ZL|SB-EMC Shield plates	279

Type	Order No.	Length L1	Length L2	No. of teeth	PU
SF|ZL 39	32351	38.5 mm 1.516 "	19.5 mm 0.768 "	3	10
SF|ZL 60	32352	59.5 mm 2.343 "	43.5 mm 1.713 "	4	10
SF|ZL 70	32353	69.1 mm 2,72 "	43.5 mm 1.713 "	5	10
SF|ZL 87	32354	86.5 mm 3.406 "	68 mm 2.677 "	6	10
SF|ZL 103	32355	102.5 mm 4.035 "	84 mm 3.307 "	7	10
SF|ZL 121	32356	121 mm 4.764 "	102.5 mm 4.035 "	8	10
SF|ZL 140	32357	139.5 mm 5.492 "	121 mm 4.764 "	9	10
SF|ZL 180	32358	180 mm 7.087 "	157 mm 6.181 "	12	10



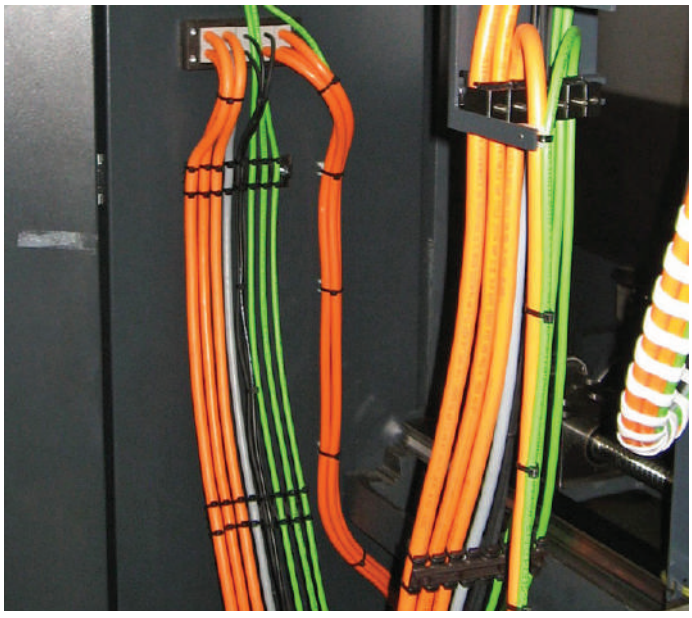
SF|ZL 180



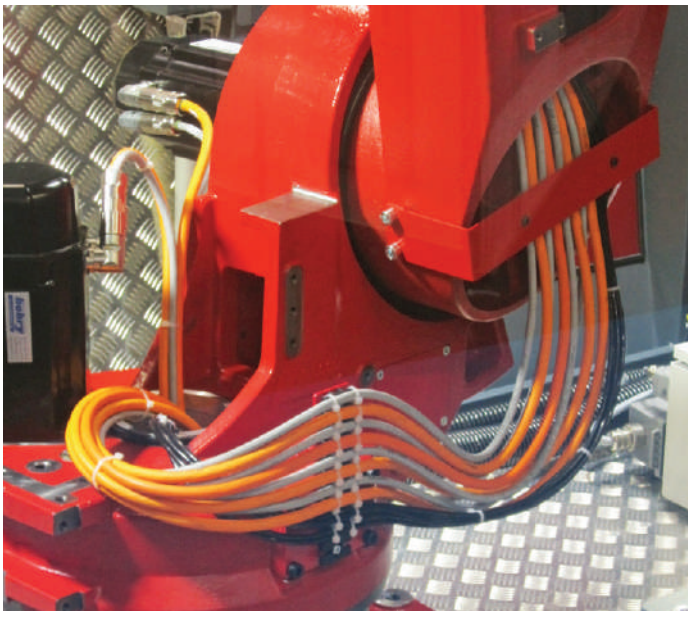
Typical Applications

ZL 180
Packaging machines

ZL
Automation



ZL 180
Machine tools



ZL 180
Robotics

3
3.1
3.2
3.3

HL3 EN 45545-2 | RoHS compliant | Made in Germany

Organise, bundle, fix: Hook-and-loop fasteners, holders for hook-and-loop fasteners

Cable ties with hook-and-loop fasteners are an increasingly common fixing mode for cables. They are used instead of standard cable ties, because they can be easily closed and opened several times. The soft material is gentle on cables, especially where vibrations are present.

Various holders serve as holders for hook-and-loop fasteners, which can be mounted quickly and easily in a variety of ways.

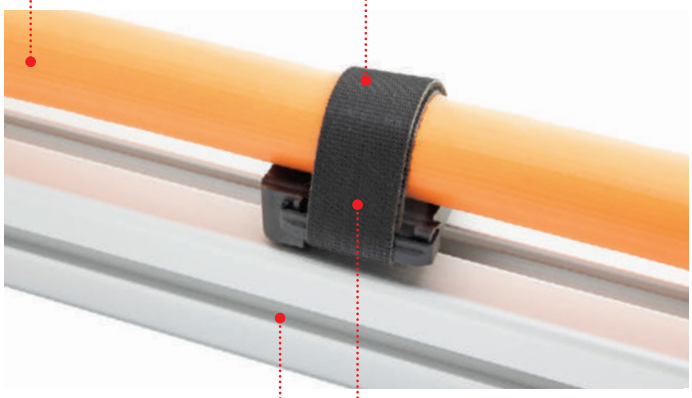
High cable density, multilayer mounting possible

Gentle on cables, especially during vibrations

No sharp edges, no risk of injury

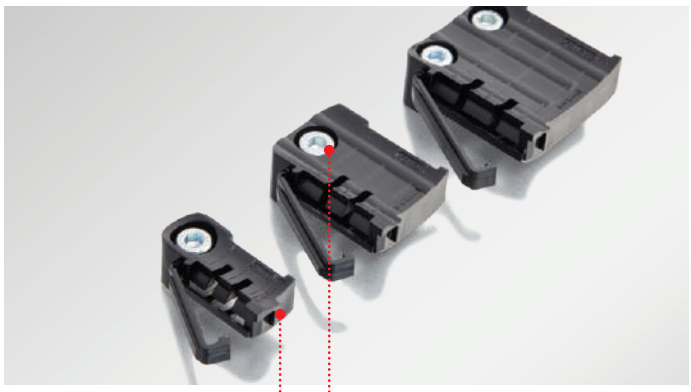
Subsequent removal or addition of cables is easily possible

Very quick assembly thanks to 90° twist lock



Available for numerous aluminum profiles and construction profiles

Different routing directions of the cables are possible



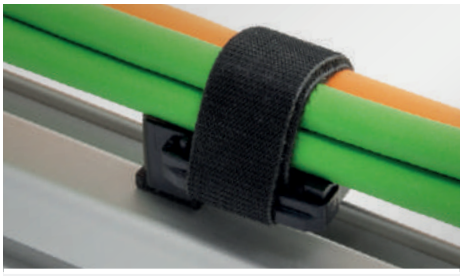
Available in three sizes: 12, 24 and 36 mm

Very fast assembly, screwable

Holders for hook-and-loop cable ties
Assembly with screws,
suitable for hook-and-loop tape KLB and hook-and-loop fastener KLKB

KBH-S

214



Holders for hook-and-loop cable ties
Pluggable,
for numerous profiles: Rittal, MiniTec, Item, Bosch Rexroth, Maytec, 80/20,
suitable for hook-and-loop tape KLB and hook-and-loop fastener KLKB

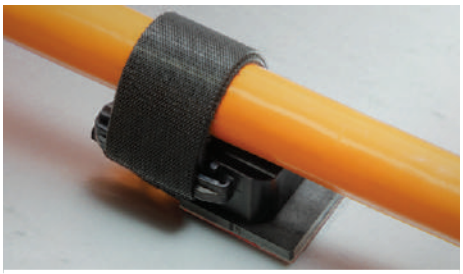
KBH-R

215 – 219

Holders for hook-and-loop cable ties
Pluggable,
for top-hat rail, C-rail, 19" system punchings,
suitable for hook-and-loop tape KLB and hook-and-loop fastener KLKB

KBH-R

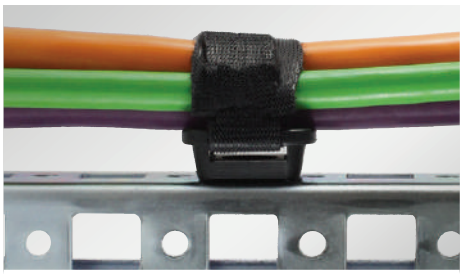
220 – 221



Holders for hook-and-loop cable ties
Assembly: self-adhesive,
suitable for hook-and-loop tape KLB and hook-and-loop fastener KLKB

KBH-KS

221



Holders for hook-and-loop cable ties
Assembly with screws, pluggable,
universal, for mounting rail systems,
suitable for KLB and KLKB

KBH-S / KBH-R / KBH-R-TX / KBH-SB / KBH-RBA / KBH-RBB

224

KBH ServiceBox
Service boxes for KBH holders,
Assembly with screws, pluggable,
available for numerous profiles

KBH-S ServiceBox / KBH-R ServiceBox

222 – 223

Hook-and-loop cable ties
for cable management,
resealable, re-usable,
available in four sizes or as a continuous roll

KLKB / KLB

225

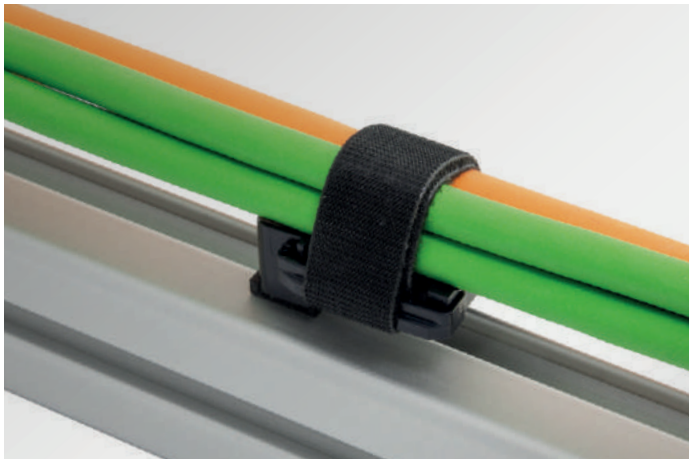
KBH
Holders for Hook-and-Loop Cable Ties

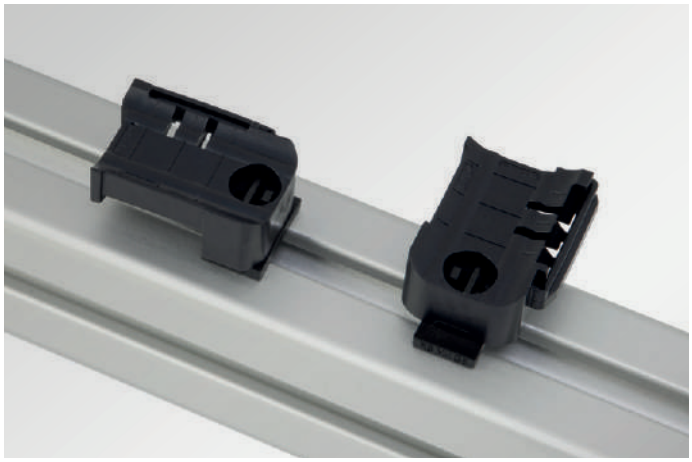
HL3 EN 45545-2 | RoHS compliant | Made in Germany

The holders for hook-and-loop fasteners KBH-S and KBH-R serve as universal holders and as cable routing systems for the hook-and-loop tape KLB and the hook-and-loop fastener KLKB.

With the KBH-R holder, cables can be routed in different directions. The 90° twist lock makes it very easy to mount.

Due to the two-part design of the KBH-R hook-and-loop holder, the cable plate (upper part) can be fixed parallel or at an angle to the profile, depending on the desired cable routing direction. If cables are added or removed later, the cable plate sizes can be changed flexibly.





Advantages & Benefits KBH-S

- Available in three sizes: 12, 24 and 36 mm
- Very fast assembly, screwable
- Suitable for hook-and-loop tape KLB and hook-and-loop fastener KLKB

Advantages & Benefits KBH-R

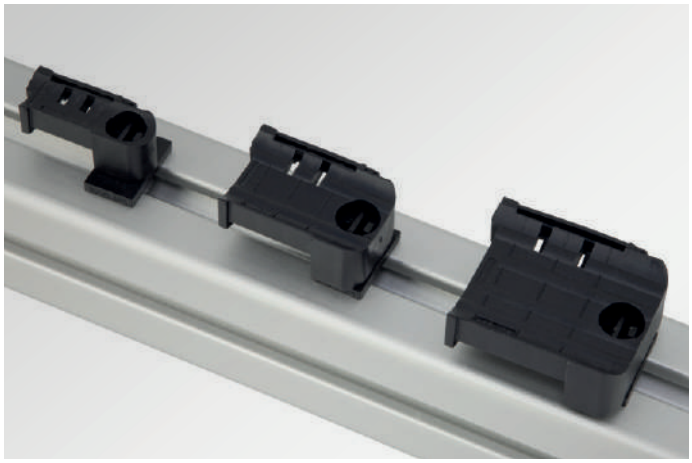
- Available in three sizes: 12, 24 and 36 mm
- Very fast assembly due to 90° twist lock
- Suitable for hook-and-loop tape KLB and hook-and-loop fastener KLKB
- Available for numerous aluminum profiles and construction profiles
- Different guiding directions of the cables possible
- Subsequent removal or addition of cables is easily possible

Specifications KBH-S, KBH-R

Material	Polyamide (PA)
Color	Black
Flame class	UL 94 V-0, self-extinguishing
Temperature	-40°C to +140°C
Properties	Halogen-free, silicone-free

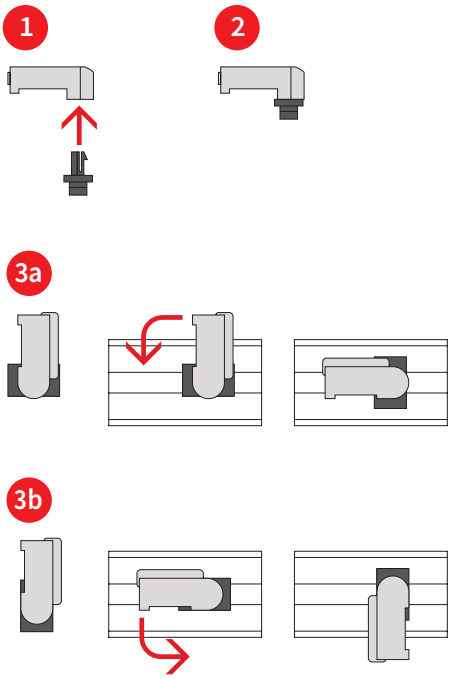
Compatible with

KLKB/KLB Cable ties with hook-and-loop fastener	225



Assembly KBH-R

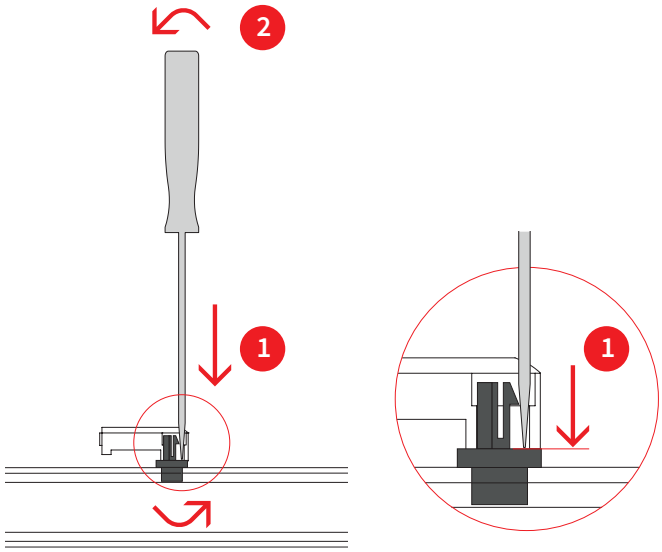
- Very fast assembly due to 90° twist lock
- Different guiding directions of the cables possible



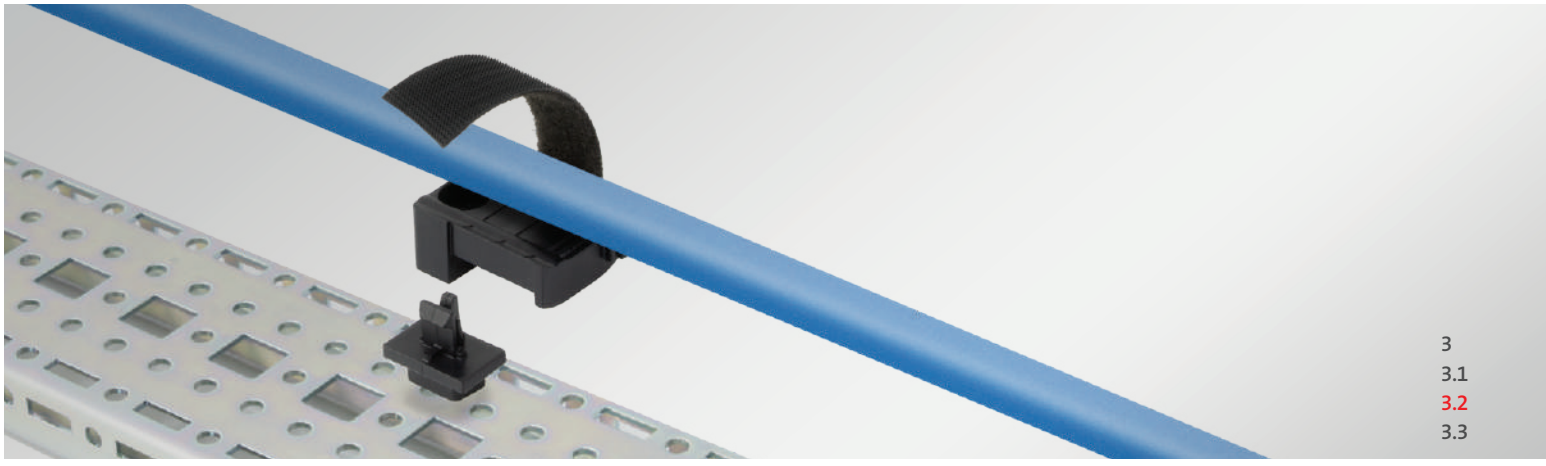
Disassembly KBH-R

Removal of the cable plate

- Insert the screwdriver past the locking lug all the way down (1)
- Hold the screwdriver down and press the handle in the direction of the locking lug (2)
- The plate of the holder is released and can then be removed from the base
- The plate must be mounted to release the base



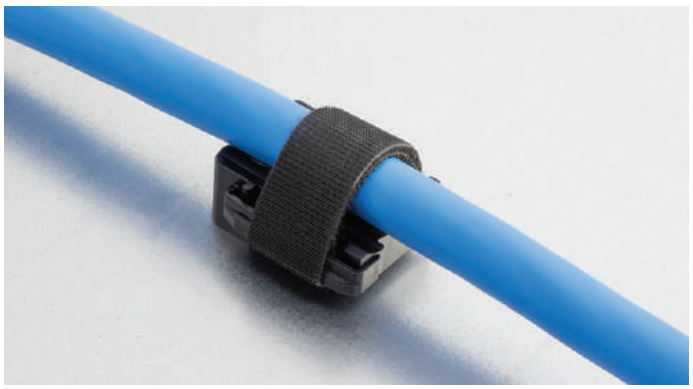
KBH-R



KBH-S
Holders for Hook-and-Loop Cable Ties

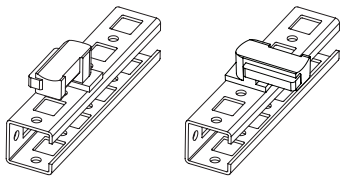
HL3 EN 45545-2 | RoHS compliant | Made in Germany

Type	Order No.	fits KLKB | KLB	compatible with	PU
Holder for hook-and-loop fastener, assembly with screws				
KBH-S 12 M5	61030 61030.9005	KLKB 200 x 13 KLB 10 KLB 15	universal	10 50
KBH-S 24 M5	61031 61031.9005	KLKB 200 x 13 KLB 10 KLB 15 KLB 20	universal	10 50
KBH-S 36-1 M5	61032 61032.9005	KLKB 300 x 17 KLB 15 KLB 20 KLB 25	universal	10 50
KBH-S 36-2 M5	61033 61033.9005	KLKB 300 x 17 KLB 15 KLB 20 KLB 25	universal	10 50

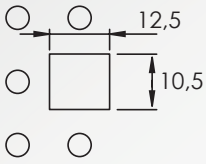


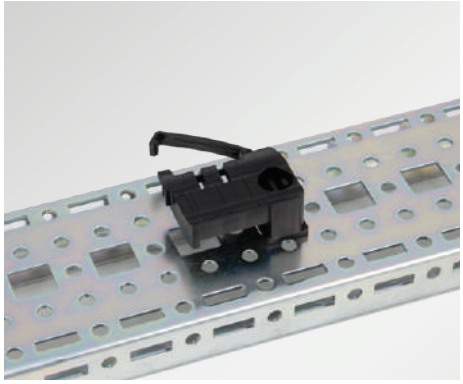
KBH-R
Holders for Hook-and-Loop Cable Ties

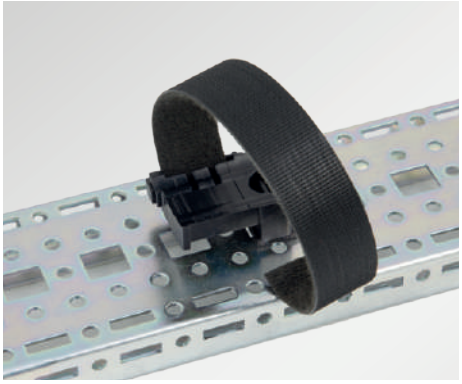
HL3 EN 45545-2 | RoHS compliant | Made in Germany

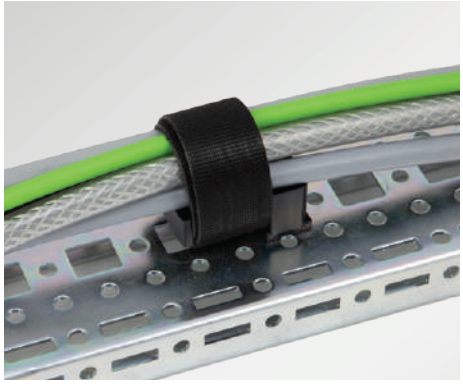


Type	Order No.	fits KLKB | KLB	compatible with	PU
Holder for hook-and-loop fastener for Rittal punched section and punched rail				
KBH-R 12 R MS Holder for hook-and-loop fastener, pluggable	61045	KLKB 200 x 13 KLB 10 KLB 15	Rittal punched section and punched rail	10
	61045.9005			50
KBH-R 24 R MS Holder for hook-and-loop fastener, pluggable	61046	KLKB 200 x 13 KLB 10 KLB 15 KLB 20	Rittal punched section and punched rail	10
	61046.9005			50
KBH-R 36-1 R MS Holder for hook-and-loop fastener, pluggable	61047	KLKB 300 x 17 KLB 15 KLB 20 KLB 25	Rittal punched section and punched rail	10
	61047.9005			50





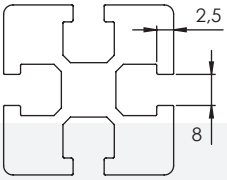
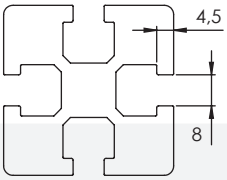


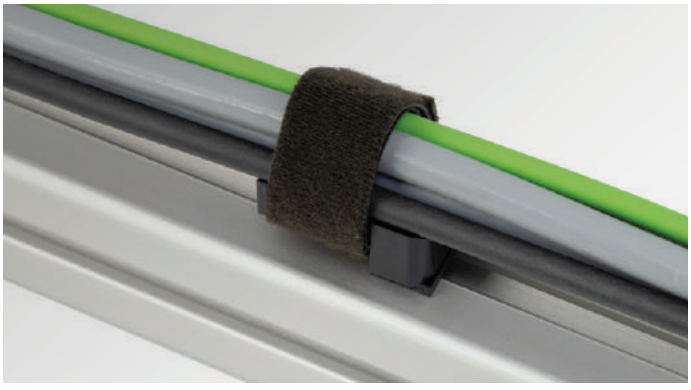


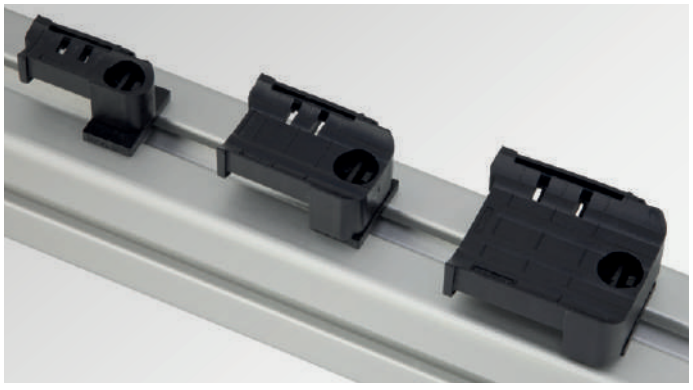
Rittal punched section

KBH-R
Holders for Hook-and-Loop Cable Ties

HL3 EN 45545-2 | RoHS compliant | Made in Germany

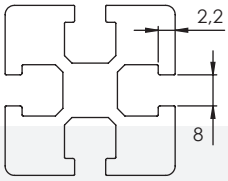
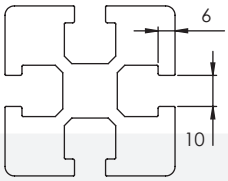
	Type	Order No.	fits KLKB | KLB	compatible with	PU
Holder for hook-and-loop fastener for MiniTec, with 8 mm groove					
	KBH-R 12 M G8 Holder for hook-and-loop fastener, pluggable	61048 61048.9005	KLKB 200 x 13 KLB 10 KLB 15	MiniTec with 8 mm groove	10 50
	KBH-R 24 M G8 Holder for hook-and-loop fastener, pluggable	61049 61049.9005	KLKB 200 x 13 KLB 10 KLB 15 KLB 20	MiniTec with 8 mm groove	10 50
	KBH-R 36-1 M G8 Holder for hook-and-loop fastener, pluggable	61050 61050.9005	KLKB 300 x 17 KLB 15 KLB 20 KLB 25	MiniTec with 8 mm groove	10 50
Holder for hook-and-loop fastener for Minitec and item, with 8 mm groove					
	KBH-R 12 M-I G8 Holder for hook-and-loop fastener, pluggable	61051 61051.9005	KLKB 200 x 13 KLB 10 KLB 15	MiniTec, Item with 8 mm groove	10 50
	KBH-R 24 M-I G8 Holder for hook-and-loop fastener, pluggable	61052 61052.9005	KLKB 200 x 13 KLB 10 KLB 15 KLB 20	MiniTec, Item with 8 mm groove	10 50
	KBH-R 36-1 M-I G8 Holder for hook-and-loop fastener, pluggable	61053 61053.9005	KLKB 300 x 17 KLB 15 KLB 20 KLB 25	MiniTec, Item with 8 mm groove	10 50

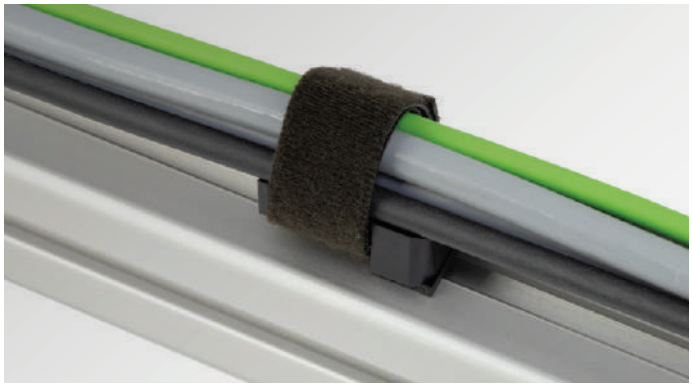


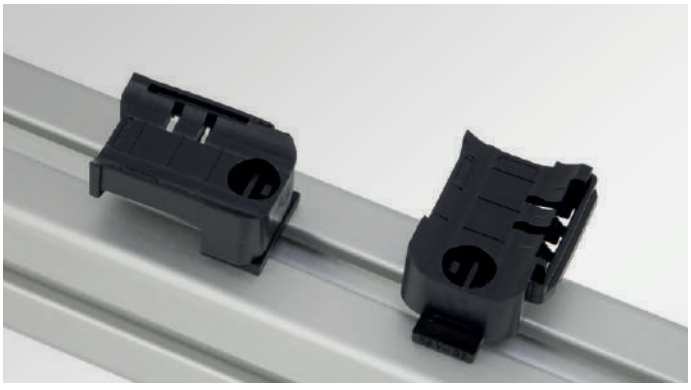


KBH-R
Holders for Hook-and-Loop Cable Ties

HL3 EN 45545-2 | RoHS compliant | Made in Germany

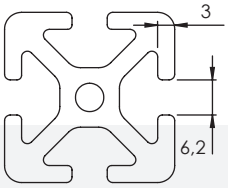
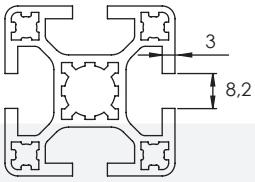
	Type	Order No.	fits KLKB | KLB	compatible with	PU
Holder for hook-and-loop fastener for Bosch Rexroth, with 8 mm groove					
	KBH-R 12 B-R G8 Holder for hook-and-loop fastener, pluggable	61054 61054.9005	KLKB 200 x 13 KLB 10 KLB 15	Bosch Rexroth with 8 mm groove	10 50
	KBH-R 24 B-R G8 Holder for hook-and-loop fastener, pluggable	61055 61055.9005	KLKB 200 x 13 KLB 10 KLB 15 KLB 20	Bosch Rexroth with 8 mm groove	10 50
	KBH-R 36-1 B-R G8 Holder for hook-and-loop fastener, pluggable	61056 61056.9005	KLKB 300 x 17 KLB 15 KLB 20 KLB 25	Bosch Rexroth with 8 mm groove	10 50
Holder for hook-and-loop fastener for Bosch Rexroth, with 10 mm groove					
	KBH-R 12 B-R G10 Holder for hook-and-loop fastener, pluggable	61057 61057.9005	KLKB 200 x 13 KLB 10 KLB 15	Bosch Rexroth with 10 mm groove	10 50
	KBH-R 24 B-R G10 Holder for hook-and-loop fastener, pluggable	61058 61058.9005	KLKB 200 x 13 KLB 10 KLB 15 KLB 20	Bosch Rexroth with 10 mm groove	10 50
	KBH-R 36-1 B-R G10 Holder for hook-and-loop fastener, pluggable	61059 61059.9005	KLKB 300 x 17 KLB 15 KLB 20 KLB 25	Bosch Rexroth with 10 mm groove	10 50

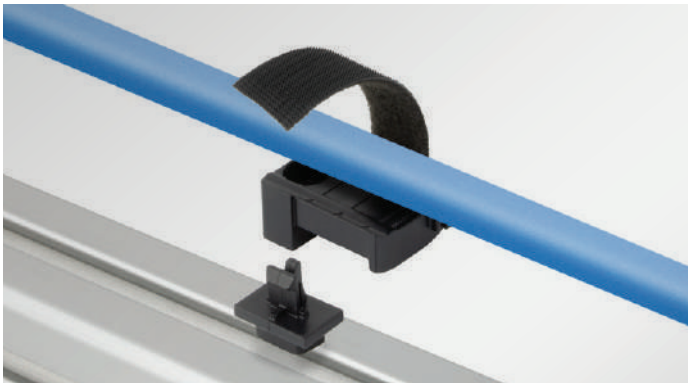


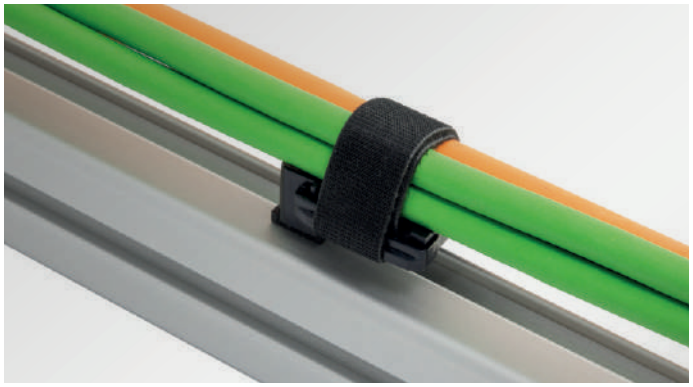


KBH-R
Holders for Hook-and-Loop Cable Ties

HL3 EN 45545-2 | RoHS compliant | Made in Germany

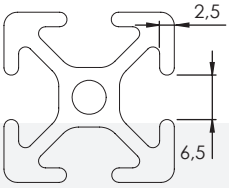
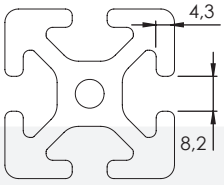
	Type	Order No.	fits KLKB | KLB	compatible with	PU
Holder for hook-and-loop fastener for item, with 6 mm groove					
	KBH-R 12 I G6 Holder for hook-and-loop fastener, pluggable	61061 61061.9005	KLKB 200 x 13 KLB 10 KLB 15	item with 6 mm groove	10 50
	KBH-R 24 I G6 Holder for hook-and-loop fastener, pluggable	61062 61062.9005	KLKB 200 x 13 KLB 10 KLB 15 KLB 20	item with 6 mm groove	10 50
	KBH-R 36-1 I G6 Holder for hook-and-loop fastener, pluggable	61063 61063.9005	KLKB 300 x 17 KLB 15 KLB 20 KLB 25	item with 6 mm groove	10 50
Holder for hook-and-loop fastener for Maytec, with 8 mm groove					
	KBH-R 12 May-G8 Holder for hook-and-loop fastener, pluggable	61065 61065.9005	KLKB 200 x 13 KLB 10 KLB 15	Maytec PG40 with 8 mm groove	10 50
	KBH-R 24 May-G8 Holder for hook-and-loop fastener, pluggable	61066 61066.9005	KLKB 200 x 13 KLB 10 KLB 15 KLB 20	Maytec PG40 with 8 mm groove	10 50
	KBH-R 36-1 May-G8 Holder for hook-and-loop fastener, pluggable	61067 61067.9005	KLKB 300 x 17 KLB 15 KLB 20 KLB 25	Maytec PG40 with 8 mm groove	10 50

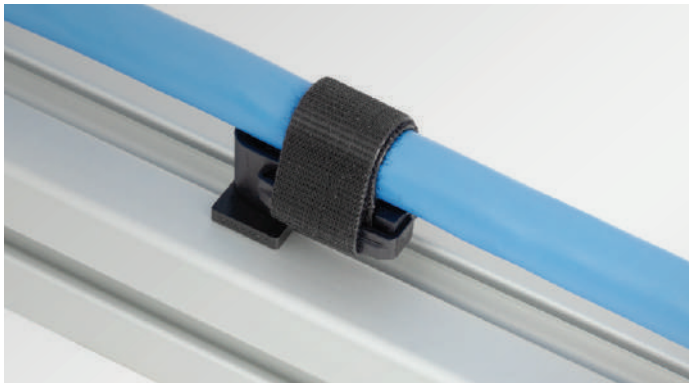


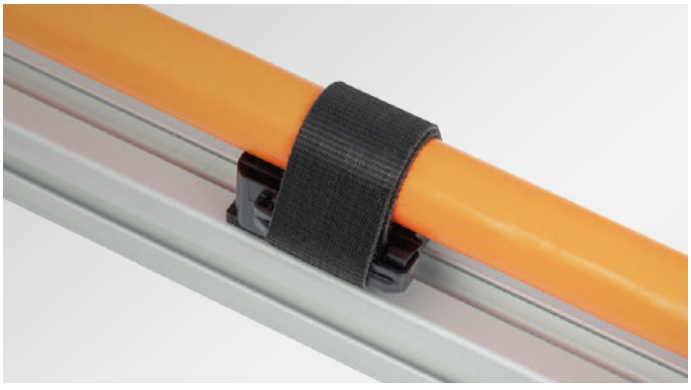


KBH-R
Holders for Hook-and-Loop Cable Ties

HL3 EN 45545-2 | RoHS compliant | Made in Germany

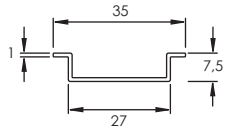
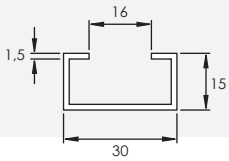
	Type	Order No.	fits KLKB | KLB	compatible with	PU
Holder for hook-and-loop fastener for profile 80/20 series 25					
	KBH-R 12 P80/20-25 Holder for hook-and-loop fastener, pluggable	61084 61084.9005	KLKB 200 x 13 KLB 10 KLB 15	Profile 80/20 series 25	10 50
	KBH-R 24 P80/20-25 Holder for hook-and-loop fastener, pluggable	61085 61085.9005	KLKB 200 x 13 KLB 10 KLB 15 KLB 20	Profile 80/20 series 25	10 50
	KBH-R 36-1 P80/20-25 Holder for hook-and-loop fastener, pluggable	61086 61086.9005	KLKB 300 x 17 KLB 15 KLB 20 KLB 25	Profile 80/20 series 25	10 50
Holder for hook-and-loop fastener for profile 80/20 series 40					
	KBH-R 12 P80/20-40 Holder for hook-and-loop fastener, pluggable	61088 61088.9005	KLKB 200 x 13 KLB 10 KLB 15	Profile 80/20 series 40	10 50
	KBH-R 24 P80/20-40 Holder for hook-and-loop fastener, pluggable	61089 61089.9005	KLKB 200 x 13 KLB 10 KLB 15 KLB 20	Profile 80/20 series 40	10 50
	KBH-R 36-1 P80/20-40 Holder for hook-and-loop fastener, pluggable	61090 61090.9005	KLKB 300 x 17 KLB 15 KLB 20 KLB 25	Profile 80/20 series 40	10 50

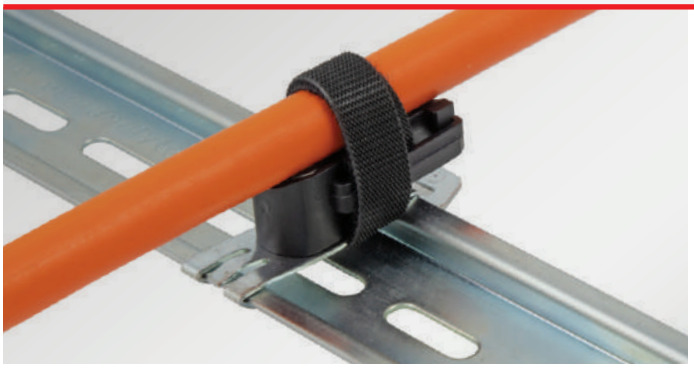


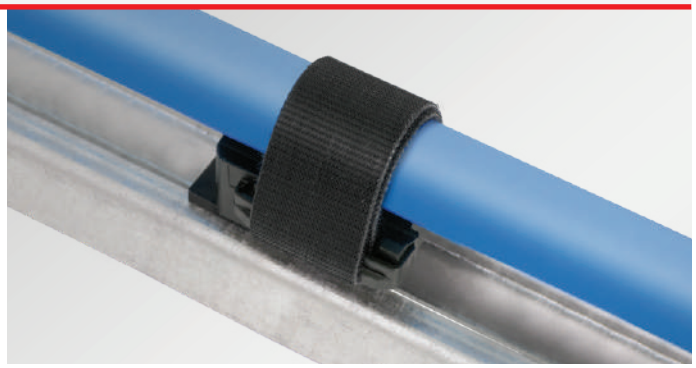


KBH-R
Holders for Hook-and-Loop Cable Ties

HL3 EN 45545-2 | RoHS compliant | Made in Germany

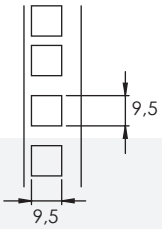
	Type	Order No.	fits KLKB | KLB	compatible with	PU
Holder for hook-and-loop fastener for assembly on 35 mm top hat DIN rails					
	KBH-R 12-SF-M4 Holder for hook-and-loop fastener, pluggable	61068 61068.9005	KLKB 200 x 13 KLB 10 KLB 15	35 mm top hat DIN rails	10 50
	KBH-R 24-SF-M4 Holder for hook-and-loop fastener, pluggable	61069 61069.9005	KLKB 200 x 13 KLB 10 KLB 15 KLB 20	35 mm top hat DIN rails	10 50
Holder for hook-and-loop fastener for assembly on C-rails					
	KBH-R 12-SC Holder for hook-and-loop fastener, pluggable	61070 61070.9005	KLKB 200 x 13 KLB 10 KLB 15	C-rails with an opening dimension of 16 mm	10 50
	KBH-R 24-SC Holder for hook-and-loop fastener, pluggable	61071 61071.9005	KLKB 200 x 13 KLB 10 KLB 15 KLB 20	C-rails with an opening dimension of 16 mm	10 50
	KBH-R 12-C Holder for hook-and-loop fastener, pluggable	61076 61076.9005	KLKB 200 x 13 KLB 10 KLB 15	C-rails with an opening dimension of 16 mm	10 50
	KBH-R 24-C Holder for hook-and-loop fastener, pluggable	61077 61077.9005	KLKB 200 x 13 KLB 10 KLB 15 KLB 20	C-rails with an opening dimension of 16 mm	10 50
	KBH-R 36-C Holder for hook-and-loop fastener, pluggable	61078 61078.9005	KLKB 300 x 17 KLB 15 KLB 20 KLB 25	C-rails with an opening dimension of 16 mm	10 50

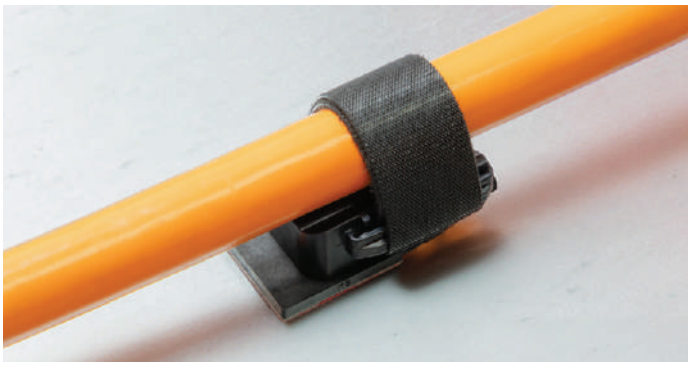




KBH-R, KBH-KS
Holders for Hook-and-Loop Cable Ties

HL3 EN 45545-2 | RoHS compliant | Made in Germany

	Type	Order No.	fits KLKB | KLB	compatible with	PU
Holder for hook-and-loop fastener for assembly on 19" system punching					
	KBH-R 12 9,5 Holder for hook-and-loop fastener, pluggable	61073 61073.9005	KLKB 200 x 13 KLB 10 KLB 15	19" system punching 9,5 x 9,5 mm	10 50
	KBH-R 24 9,5 Holder for hook-and-loop fastener, pluggable	61074 61074.9005	KLKB 200 x 13 KLB 10 KLB 15 KLB 20	19" system punching 9,5 x 9,5 mm	10 50
Holder for hook-and-loop fastener, self-adhesive					
	KBH-KS 12 Holder for hook-and-loop fastener, self-adhesive	61080 61080.9005	KLKB 200 x 13 KLB 10 KLB 15	universal	10 50
	KBH-KS 24 Holder for hook-and-loop fastener, self-adhesive	61081 61081.9005	KLKB 200 x 13 KLB 10 KLB 15 KLB 20	universal	10 50
	KBH-KS 36-1 Holder for hook-and-loop fastener, self-adhesive	61082 61082.9005	KLKB 300 x 17 KLB 15 KLB 20 KLB 25	universal	10 50



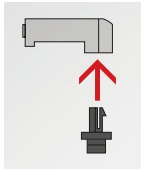
KBH ServiceBox

Service Case with Assortment of Holders for Hook-and-Loop Fasteners

Convenient – everything available right away!

The KBH service cases are ideal for installation or maintenance work, but the range also provides useful services for new developments.

With the KBH-S and KBH-R service cases, the required holders are always available.



The pluggable holders for hook-and-loop fasteners are created by combining KBH-S screw-on cable plates and bases matched to the respective profile.

KBH-S ServiceBox

for Assembly with Screws

Content *
50× KBH-S 12 M5
25× KBH-S 24 M5
25× KBH-S 36-2 M5
1× KEL-DPZ 25 cable entry plate
1× icotek screwdriver

Order No. 88031

KBH-R ServiceBox

for Rittal Punched Section and Punched Rail

Content *
50× KBH-S 12 M5
30× KBH-S 24 M5
20× KBH-S 36-1 M5
100× RS MS base for Rittal punched section and punched rail
1× KEL-DP 32 cable entry plate
1× QVT 20 cable gland
1× icotek screwdriver

Order No. 88032

KBH-R ServiceBox

for MiniTec and Item Profiles with 8 mm Groove

Content *
40× KBH-S 12 M5
20× KBH-S 24 M5
30× KBH-S 36-1 M5
90× RS M-I G8 base for MiniTec and item profiles with 8 mm groove
1× KEL-DP 20 cable entry plate
1× icotek screwdriver

Order No. 88033

* Subject to alterations

KBH ServiceBox

Service Case with Assortment of Holders
for Hook-and-Loop Fasteners

HL3 EN 45545-2 | RoHS compliant | Made in Germany

KBH-R ServiceBox
for BoschRexroth Profiles with 8 mm Groove

Content *
30× KBH-S 12 M5
30× KBH-S 24 M5
20× KBH-S 36-1 M5
80× RS B-R G8 base for BoschRexroth profiles with 8 mm groove
1× KEL-SCDP-TR 32 cable entry plate
1× icotek screwdriver

Order No. 88034

KBH-R ServiceBox
for Item Profiles with 6 mm Groove

Content *
40× KBH-S 12 M5
20× KBH-S 24 M5
30× KBH-S 36-1 M5
90× RS item G6 base for item profiles with 6 mm groove
1× KEL-DPZ 25|4 gray cable entry plate
1× icotek screwdriver

Order No. 88035

KBH-R ServiceBox
for MayTec Profiles with 8 mm Groove

Content *
40× KBH-S 12 M5
20× KBH-S 24 M5
30× KBH-S 36-1 M5
90× MT G8.3 base for MayTec PG40 profiles with 8 mm groove
1× KEL-DPZ 25|4 gray cable entry plate
1× icotek screwdriver

Order No. 88036

KBH-R ServiceBox
for 19" System Punching

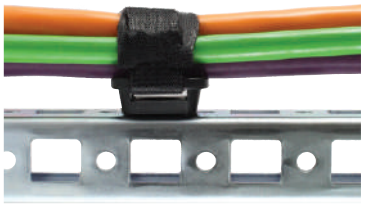
Content *
50× KBH-S 12 M5
30× KBH-S 24 M5
100× RS R G9.5 base for 19" system punching 9,5 × 9,5 mm
1× KEL-DP 32|7 gray cable entry plate
1× QVT 20 cable gland, QT 4
1× icotek screwdriver

Order No. 88037

* Subject to alterations

KBH
Holders for Hook-and-Loop Cable Ties

HL3 EN 45545-2 | UV ISO 4892-2A | RoHS compliant | Made in Germany



These holders can be used in combination with hook-and-loop cable ties KLKB and hook-and-loop tape KLB.

A large variety of holders provides unique and numerous mounting possibilities.

The KBH-R hook-and-loop tape holder is particularly suitable for tool-less mounting in the VX25 enclosure from Rittal.

Advantages & Benefits

- Assembly within seconds
- Secure hold
- Flexible usage

Specifications KBH-S, KBH-R, KBH-R-TX

Material	Polyamide (PA)
Color	■ black
Flame class	UL 94 V-0
Op. temperature	- 40°C to + 140°C | - 40°F to + 284°F
Properties	Halogen-free, silicone-free

Specifications KBH-SB, KBH-RBA

Material	Polyamide (PA)
Color	■ black (KBH-SB) □ nc (KBH-RBA)
Flame class	UL94-V2
Op. temperature	- 40°C to + 85°C (short-term to 110°C) - 40°F to + 185°F (short-term to 230°F)

Specifications KBH-RBB

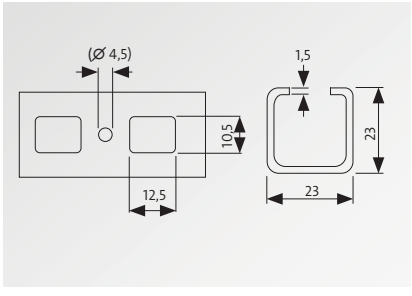
Material	Polyamide (PA)
Color	■ black
Op. temperature	- 40°C to + 120°C | - 40°F to + 248°F

Compatible with

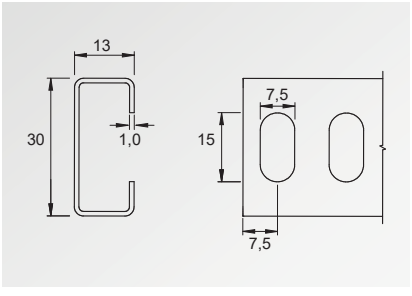
KLKB / KLB Cable ties with hook-and-loop fastener 225

Description		Type		Order No.	fits KLKB | KLB	compatible with	PU
Holder for hook-and-loop fastener, screwable							
		KBH-S	■	61019	KLKB 200 × 7 KLKB 200 × 13 KLB 10 Cable ties up to 12 mm width	23 × 23 mm mounting rail	100
		KBH-SB	■	61002	KLKB 200 × 7	universal	100
Holder for hook-and-loop fastener, pluggable							
		KBH-R	■	61018	KLKB 200 × 7 KLKB 200 × 13 KLB 10 Cable ties up to 12 mm width	23 × 23 mm mounting rail systems for Rittal VX25	100
		KBH-R-TX	■	61005	KLKB 200 × 7 KLKB 200 × 13 KLB 10 Cable ties up to 12 mm width	Telex rail	100
		KBH-RBA nc	□	61003	KLKB 200 × 7	drill-hole ø 6 mm	100
		KBH-RBB	■	61004	KLKB 200 × 7	drill-hole ø 6.5 mm	100

Telex rail



23 × 23 mm mounting rail



Telex rail

* Only KBH-S / KBH-R

KLKB | KLB
Hook-and-Loop Cable Ties

RoHS compliant

Cable ties with hook-and-loop fasteners are a more and more common fixing mode for cables. They are used instead of standard cable ties, because they can be easily closed and opened several times. The soft material is gentle on cables, especially where vibrations are present.

Hook-and-loop cable ties are available individually (KLKB) in four different sizes or as a continuous tape roll (KLB) in four different sizes.

Advantages & Benefits

- No risk of injury compared to cut cable ties
- Reusable
- Adaptable
- The cable tie material is gentle on cables, especially if there are vibrations

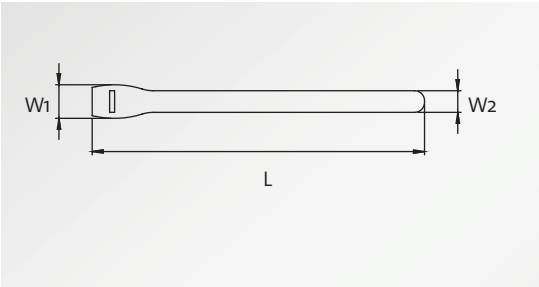
Specifications

Material	Polypropylene + Velours PA
Color	black
Operating temperature	- 30°C to + 80°C - 22°F to + 176°F

Accessories

KBH Holder for hook-and-loop fastener 215 - 221

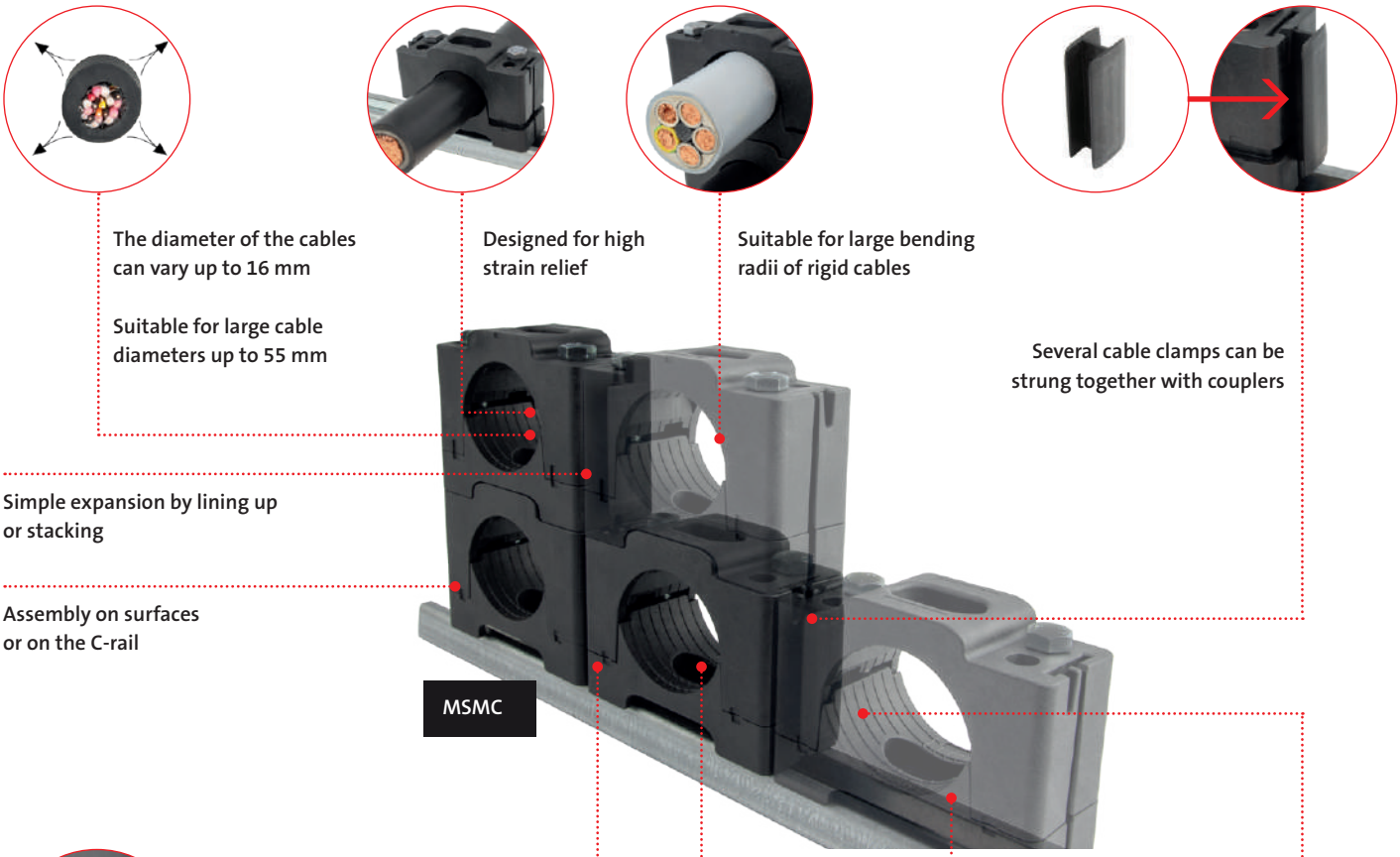
Type	Size [mm] L	W1	W2	Order No.	PU
KLKB 200 × 7 bk (PU 100 = 1 reel)	200 7.874 "	13 0.512 "	7 0.276 "	61021	100
KLKB 200 × 7 bk on reel (750 pcs.)	200 7.874 "	13 0.512 "	7 0.276 "	61025	1
KLKB 200 × 13 bk (PU 100 = 1 reel)	200 7.874 "	20 0.787 "	13 0.512 "	61022	100
KLKB 200 × 13 bk on reel (750 pcs.)	200 7.874 "	20 0.787 "	13 0.512 "	61026	1
KLKB 230 × 13 bk (PU 100 = 1 reel)	230 9.055 "	20 0.787 "	13 0.512 "	61023	100
KLKB 230 × 13 bk on reel (650 pcs.)	230 9.055 "	20 0.787 "	13 0.512 "	61027	1
KLKB 300 × 17 bk (PU 100 = 1 reel)	300 11.811 "	25 0.984 "	17 0.669 "	61024	100
KLKB 300 × 17 bk on reel (500 pcs.)	300 11.811"	25 0.984 "	17 0.669 "	61028	1
KLB 10 bk	–	–	10 0.394 "	61011	25 m
KLB 15 bk	–	–	15 0.591 "	61012	25 m
KLB 20 bk	–	–	20 0.787 "	61013	25 m
KLB 25 bk	–	–	25 0.984 "	61014	25 m



3.3 MSMC
Modular Stackable Cable Clamp

The modular stackable cable clamp MSMC is used for easy, quick and secure fastening of cables, pipes and other cylindrical components. The great advantage of this cable clamp is that it can be easily extended by stacking or lining up.

By using the CMC30 connector, different clamping areas can be connected to each other. The MSMC offers a very high level of corrosion protection thanks to the choice of materials for the cable clamps and screws.



Modular Stackable Cable Clamp
for cable diameters 10 – 32 mm

MSMC

228 – 229

Modular Stackable Cable Clamp
for cable diameters 30 – 55 mm

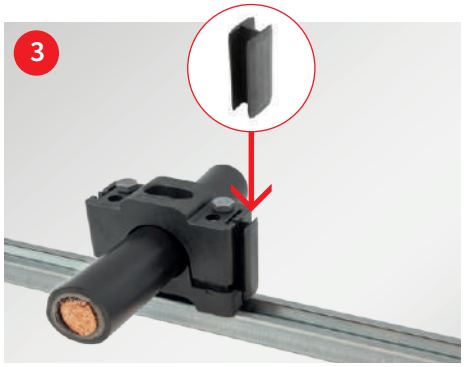
MSMC

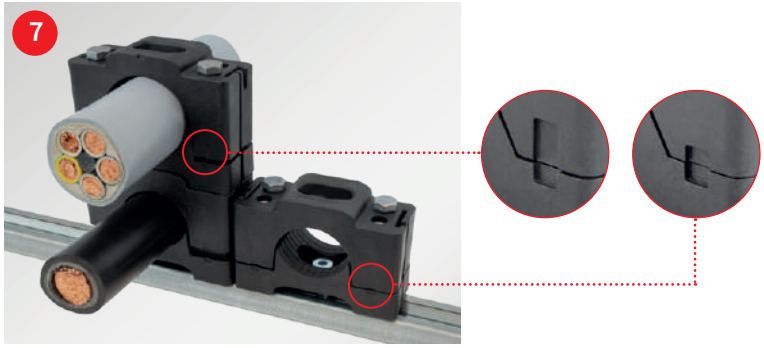
228 – 229

Accessories for MSMC

230 – 231

Assembly – lining up and stacking





The great advantage of this cable clamp is that it can be easily extended by stacking or lining up. With Set B and a coupler, any number of cable clamps can be arranged in a row; with Set A, the cable clamps can also be stacked by rotating the top section by 180°.

MSMC
Modular Stackable Cable Clamp

IEC 61914

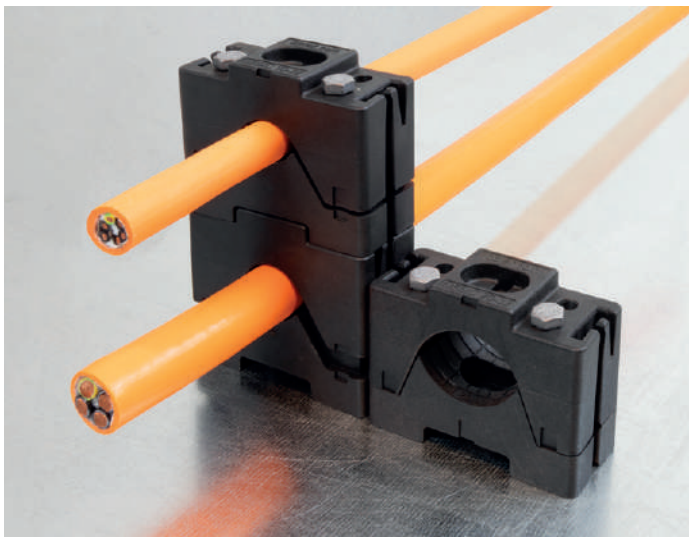
The modular stackable cable clamp MSMC is used for easy, quick and secure fastening of cables, pipes and other cylindrical components. The variable clamping range is up to 16 mm.

The great advantage of this cable clamp is that it can be easily extended by stacking or lining up. By using the CMC30 coupler, different clamping areas can be connected to each other. The MSMC offers a very high level of corrosion protection thanks to the choice of materials for the cable clamps and screws.

The cable clamp consists of an upper and a lower part as well as hexagon head screws. A coupler is used to easily connect several cable clamps together horizontally. The longitudinal and transverse ridges of the support surface serve to absorb torsional and tensile forces. The central mounting point (slotted hole) offers a high degree of flexibility on many surfaces. For even greater stability and torsion resistance, two long screws can be used for fastening.

The cable clamps are available as Set A for lining up and stacking or as Set B for lining up. Set B contains a cable clamp (upper and lower part), a coupler and two short hexagon head screws. Set A additionally contains two long hexagon head screws.

The cable clamp can be combined with a sliding nut for optional assembly on the C-rail.



Advantages

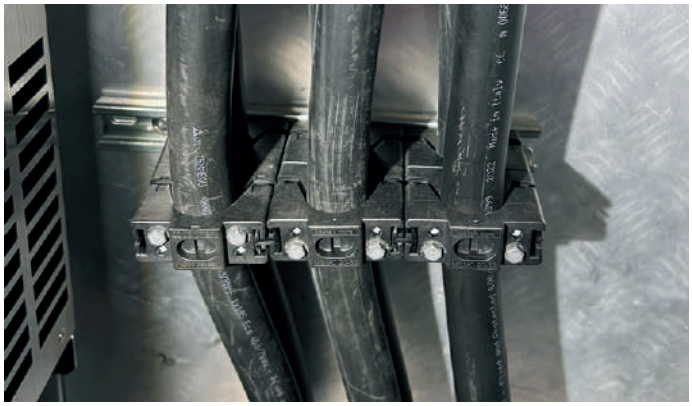
- Several cable clamps can be lined up or stacked together
- The diameter of the cables can vary up to 16 mm
- Designed for high strain relief
- Suitable for large cable diameters up to 55 mm
- Suitable for large bending radii of rigid cables
- Assembly on surfaces or on the C-rail
- Ridges in the half shells enable the absorption of tensile and torsional forces
- Anti-rotation lock during assembly with two through bolts
- The coupler can be used as a mounting aid for overhead mounting
- Weather-resistant material

Specifications

Material	Polyamide (PA)
Color	black
Flame class	UL 94 V-0, self-extinguishing
Temperature	-40°C to +140°C (static)
Properties	Halogen free, silicon free

MSMC
Modular Stackable Cable Clamp

Description	Type	Clamping range	Dimensions Length x Width x Height	Order No.	PU
Cable clamp Set A 10-22	MSMC 10-22 | Set A	10 – 22 mm	64 x 26 x 47 mm	32400	5
Cable clamp Set B 10-22	MSMC 10-22 | Set B	10 – 22 mm	64 x 26 x 47 mm	32401	5
Cable clamp Set A 20-32	MSMC 20-32 | Set A	20 – 32 mm	64 x 26 x 47 mm	32410	5
Cable clamp Set B 20-32	MSMC 20-32 | Set B	20 – 32 mm	64 x 26 x 47 mm	32411	5
Cable clamp Set A 30-46	MSMC 30-46 | Set A	30 – 46 mm	100 x 40 x 64,5 mm	32420	5
Cable clamp Set B 30-46	MSMC 30-46 | Set B	30 – 46 mm	100 x 40 x 64,5 mm	32421	5
Cable clamp Set A 44-55	MSMC 44-55 | Set A	44 – 55 mm	100 x 40 x 72,5 mm	32430	5
Cable clamp Set B 44-55	MSMC 44-55 | Set B	44 – 55 mm	100 x 40 x 72,5 mm	32431	5
Coupler for cable clamp small 10-22, 20-32	CMC 10	–	35 x 13,4 x 12 mm	32598	10
Coupler for cable clamp large 30-46, 44-55	CMC 30	–	50 x 20 x 15 mm	32599	10
Sliding nut for C-rail for cable clamp small 10-22, 20-32 including M5 hexagon head screw	SCMC 10	–	40 x 25 x 6,5 mm	32596	5
Sliding nut for C-rail for cable clamp large 30-46, 44-55 including M8 hexagon head screw	SCMC 30	–	40 x 25 x 6,5 mm	32597	5



RoHS compliant

Elastic clamp pad set

In combination with the practical elastic clamp pads, MSMC cable clamps offer expanded and optimised application possibilities. The inserts are very easy to install; they are placed directly onto the upper and lower parts of the MSMC.

Please note: The use of the inserts changes the clamping range of the cable clamp!

Advantages

- Enhanced vibration and oscillation damping
- The material offers higher friction, enabling the use of smooth pipes
- Compensation for diameter changes in cables or hydraulic lines caused by temperature fluctuations
- Gentle clamping of sensitive cables

Specifications

Material	NBR
Color	black
Temperature	-30°C to +90°C

Type	Suitable for	Clamping range MSMC without insert	Clamping range MSMC with insert	Order No.	PU
ECP 1	MSMC 10-22	ø 10 – 22 mm	ø 6 – 18 mm	32590	5
ECP 2	MSMC 20-32	ø 20 – 32 mm	ø 16 – 28 mm	32591	5
ECP 3	MSMC 30-46	ø 30 – 46 mm	ø 26 – 42 mm	32592	5
ECP 4	MSMC 44-55	ø 44 – 55 mm	ø 40 – 51 mm	32593	5

Strain relief system

Robust system for cable strain relief in the control cabinet, consisting of four retaining brackets and a mounting bracket. The retaining brackets are available to fit all sizes of MSMC cable clamps. The mounting bracket is designed for MSMC 30-46 and 44-55 and is mounted on the base plate.

In combination with the KEL-DPF 50 cable entry, even large, heavy cables can be reliably fixed and strain-relieved after being routed through the switch cabinet base.

Advantages

- Reliable strain relief for large and heavy cables
- Available for all MSMC clamping ranges
- For neat cable routing throughout the entire control cabinet area

Specifications

Material	Galvanised steel

Accessories

KEL-DPF	190 - 191

Type	Suitable for	Order No.	PU
MBR 109-50 retaining bracket	MSMC 10-22 MSMC 20-32	32120	5
MBR 109-80 retaining bracket	MSMC 10-22 MSMC 20-32	32121	5
MBR 154-50 retaining bracket	MSMC 30-46 MSMC 44-55	32122	5
MBR 154-80 retaining bracket	MSMC 30-46 MSMC 44-55	32123	5
MW 110-43 mounting bracket	MSMC 30-46 MSMC 44-55	32124	1

Please note: Assemble as when stacking the MSMC, with short markings at the bottom and long markings at the top.

MSMC as clamping system for CONFiX™ corrugated conduits

Thanks to the high modularity of MSMC cable clamps, CONFIX corrugated conduits can be guided and positioned excellently. There is a suitable MSMC size available for all CONFIX corrugated conduits, ranging from NW 8.5 to NW 50.

Advantages

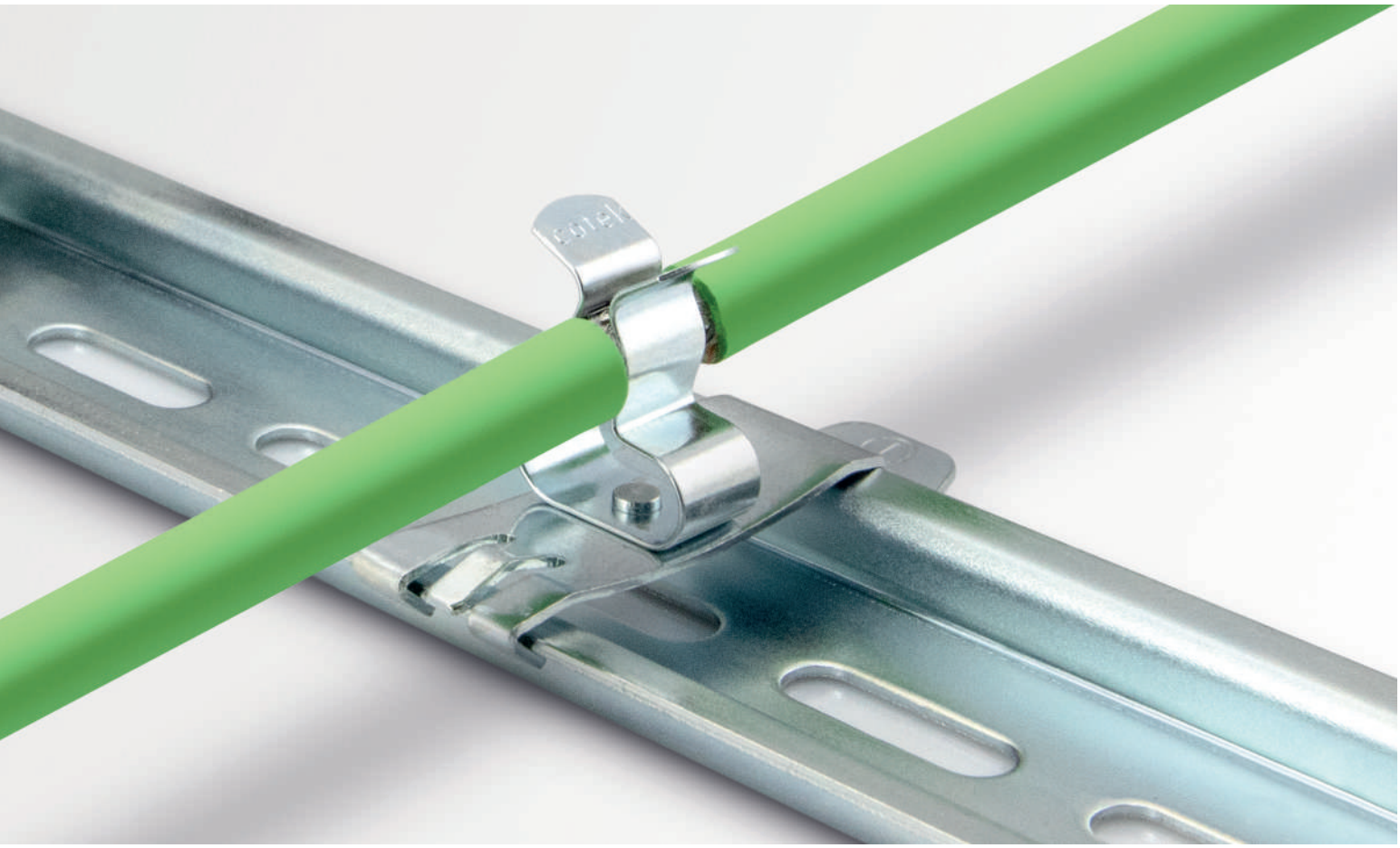
- Torsion-resistant conduit guidance when mounted with two screws
- Increased anti-twist protection
- The closed guide created by the MSMC screw connection prevents the conduit from falling out, for example during overhead installation
- Flexible mounting options, e.g. on C-rails
- Enables corrugated conduits to be lined up and stacked

Please note: When using corrugated hoses, the MSMC screw connection should only be tightened by hand with a light torque. The specification of 3 Nm is only valid when used with cables.

Accessories

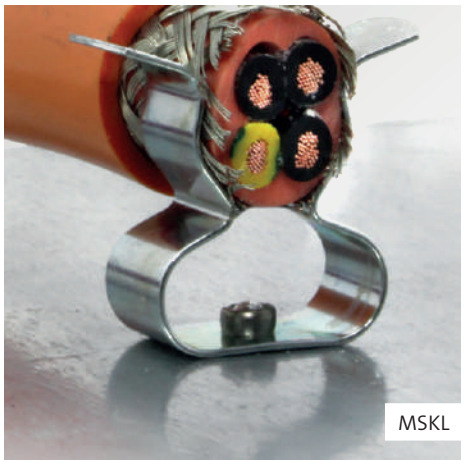
CONFiX conduits 306 - 308

CONFiX conduit	External ø	Order No. conduit	MSMC cable clamp
CONFiX split corrugated conduits			
CONFiX WST NW 10	ø 13,6	31200	MSMC 10-22
CONFiX WST NW 14	ø 18,5	31210	MSMC 10-22
CONFiX WST NW 16	ø 21,5	31215	MSMC 10-22 MSMC 20-32
CONFiX WST NW 20	ø 25,5	31220	MSMC 20-32
CONFiX WST NW 23	ø 31	31230	MSMC 20-32 MSMC 30-46
CONFiX WST NW 29	ø 35,5	31235	MSMC 30-46
CONFiX WST NW 37	ø 42,4	31240	MSMC 30-46
CONFiX WST NW 45	ø 54	31250	MSMC 44-55
CONFiX corrugated conduits			
CONFiX WS-B-PA NW 8,5	ø 11,4	31572	MSMC 10-22
CONFiX WS-B-PAL- NW 8,5	ø 11,4	31592	MSMC 10-22
CONFiX WS-B-PP- NW 8,5	ø 11,4	31612	MSMC 10-22
CONFiX WS-B-PA NW 10	ø 13	31574	MSMC 10-22
CONFiX WS-B-PAL- NW 10	ø 13	31594	MSMC 10-22
CONFiX WS-B-PP- NW 10	ø 13	31614	MSMC 10-22
CONFiX WS-B-PA NW 13	ø 15,8	31576	MSMC 10-22
CONFiX WS-B-PAL- NW 13	ø 15,8	31596	MSMC 10-22
CONFiX WS-B-PP- NW 13	ø 15,8	31616	MSMC 10-22
CONFiX WS-B-PA NW 17	ø 21,2	31578	MSMC 10-22
CONFiX WS-B-PAL- NW 17	ø 21,2	31598	MSMC 10-22
CONFiX WS-B-PP- NW 17	ø 21,2	31618	MSMC 10-22
CONFiX WS-B-PA-NW 23	ø 28,3	31580	MSMC 20-32
CONFiX WS-B-PAL- NW 23	ø 28,3	31600	MSMC 20-32
CONFiX WS-B-PP- NW 23	ø 28,3	31620	MSMC 20-32
CONFiX WS-B-PA-NW 29	ø 34,5	31582	MSMC 30-46
CONFiX WS-B-PAL- NW 29	ø 34,5	31602	MSMC 30-46
CONFiX WS-B-PP- NW 29	ø 34,5	31622	MSMC 30-46
CONFiX WS-B-PA-NW 37	ø 42,4	31584	MSMC 30-46
CONFiX WS-B-PAL- NW 37	ø 42,4	31604	MSMC 30-46
CONFiX WS-B-PP- NW 37	ø 42,4	31624	MSMC 30-46
CONFiX WS-B-PA-NW 50	ø 54,5	31566	MSMC 44-55
CONFiX WS-B-PAL- NW 50	ø 54,5	31606	MSMC 44-55
CONFiX WS-B-PP- NW 50	ø 54,5	31626	MSMC 44-55



EMV EMC CEM
IP55
RINA
EN 61373
RoHS compliant
Made in Germany
Ex

EMC Solutions
Shield Clamps and Cable Entry Systems

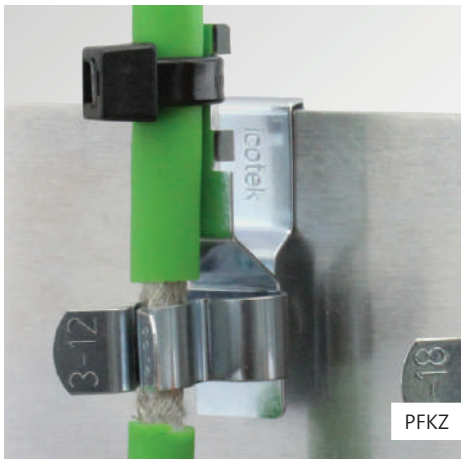

MSKL

LFZ

SFZ

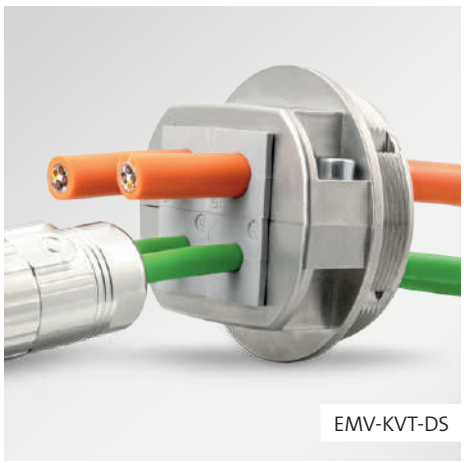
PFZ

LFC



PFKZ

EMV-KEL-DS


EMV-KVT-DS

The icotek EMC shield clamps are characterised by excellent dissipation of high-frequency interference and efficient EMC shielding for cables from 1.5 to 75 mm diameter.

For process measurement and control equipment, an increasingly higher level of protection against failure is required. Earthing of the cable shields is very important. The area where the cable shield is connected to the enclosure earth is a critical point. It is very important that the connection has a low resistance.

icotek EMC products therefore provide a good solution. The SKL shield clamps offer a large contact area to the cable shield. In comparison to conventional shield brackets and up to 50% higher contact area can be achieved when using the SKL line. The specified clamping range can be exceeded up to 10%.

In high frequency fields, the SKL shield clamps provide a low resistance. The effective range is up to 1,000 MHz below 120 Ohms and 10 kHz to 100 MHz significant below 20 Ohms.

In case of conducted as well as field bound EMI disturbances, our split cable entry system EMC-KEL-DS and our split cable gland EMC-KVT-DS offer an effective way to divert and block those disturbances and provides an alternative to conventional EMC cable glands.

Product Range Shield Clamps	Mounting Type	Strain Relief available	Multi Shield Clamps	Page
MSKL / SKL	for screw mounting, riveting	●	–	241 – 243
LF	for screw mounting	●	–	244 – 246
SF	for TS35 rails	●	–	247 – 249
PFS	for bus bars	●	●	250 – 255
SC	for C-rails	●	–	256 – 259
PFK	pluggable	●	●	260 – 263
PCB	for printed circuit boards	–	–	264
STFZ	for decentralized bus modules	●	●	265 – 267
RLF	Row solutions	●	●	270 – 273

Product Range EMC Cable Entry Frames	IP55	Strain Relief	Cable Ø mm min | max	For max. no. of Cables	Page
EMC-KEL-DS	●	●	1 – 35	40	290 – 291
EMC-KVT-DS	●	●	1 – 35	16	294 – 295
EMC-KEL-U	–	–	1 – 35	40	292 – 293

4
4.1
4.2
4.3
4.4

4.1 EMC Cable Shield Grounding
Shield Clamps and Grounding Components

MSKL type with large clamping range

In comparison to conventional shield clamps, an up to 50% higher contact area is achieved. Shield and cable strands will not be squeezed.

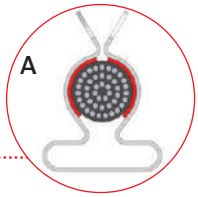


Figure A: SKL-line

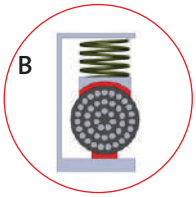
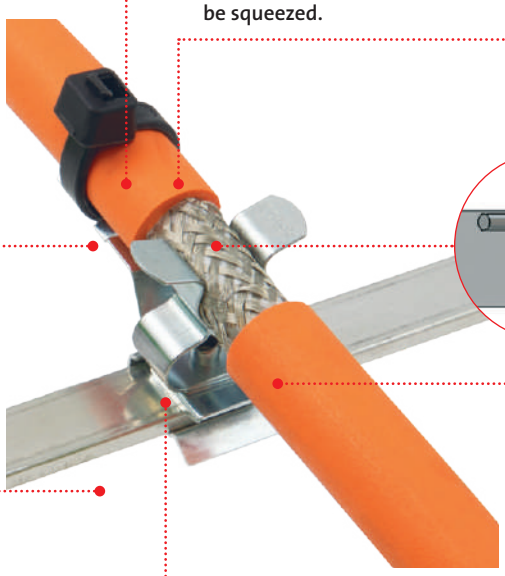
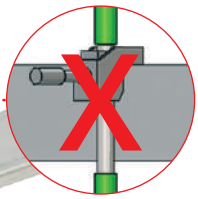


Figure B: Conventional systems

Available in various sizes





Do not use the shield connection as a strain relief location!

High cable density possible

Vibration resistance and twist protection due to solid rivets

Wide variety in mounting types: DIN rail/C-rail snap mount, screw mount ...

Secure hold for cable ties and cables, strain relief acc. to EN 62444

EMC Shield Clamps MSKL

Due to its special design, the clamping ranges of the MSKL are very large while the dimensions are comparatively small. (Example: MSKL 3-12, assembled with a 12 mm cable shield: width 26.25 mm).

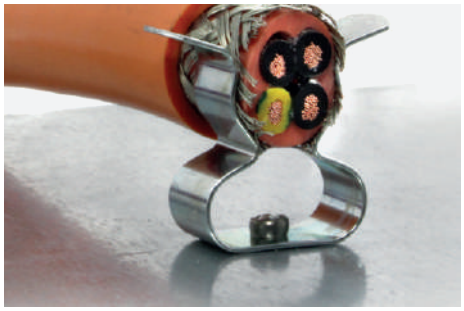
Advantages & Benefits

- Large clamping areas, therefore less product sizes needed to cover a large cable diameter range
- Space-saving design, even when fully assembled
- Partially with integrated strain relief
- Large cable shield contact area
- Easy assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Shock and vibration resistant, maintenance free

More information about the connection between the cable shield and the equipotential bonding bar in PROFINET applications: www.icotek.com/us/profinet

* Shield connections are not certifiable as components according to the requirements of the directive and the standards for electrical equipment in potentially explosive atmospheres. Thus, the use of the shield connections in hazardous areas is possible even without a corresponding approval and marking.

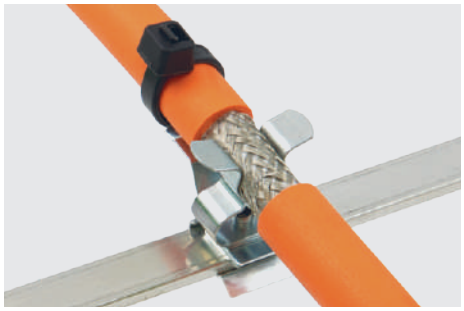
Assembly Possibilities



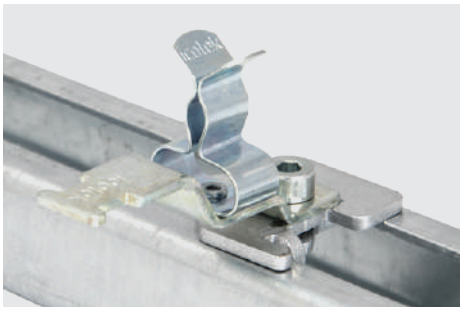
Assembly with rivets

Assembly with screws

Assembly on 35 mm DIN rails



Assembly on 10 × 3 mm bus bars



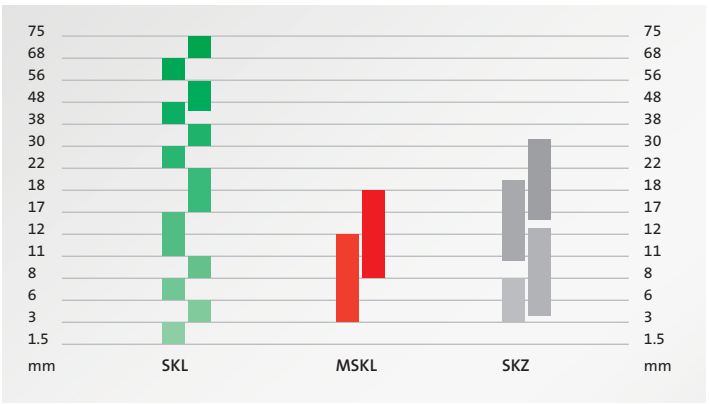
Assembly on 30 mm C-rails

Assembly by clamping onto sheet edges

Advantages of Solid Rivets

- Vibration resistance according to EN 61373
- Twist protection due to solid rivets
- Stronger contact pressure of the riveted parts

Clamping Ranges SKL | MSKL | SKZ



4.1 EMC Cable Shield Grounding
Shield Clamps and Grounding Components

EMC Shield Clamps
for Assembly with Rivets/with Screws

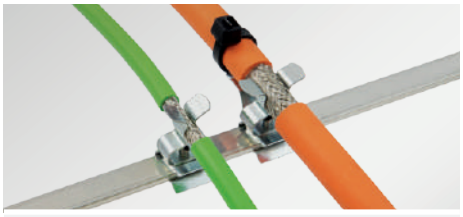
241 – 243

EMC Shield Clamps
for Assembly with Screws
with/without Strain Relief Function

244 – 246

EMC Shield Clamps
for TS35 Rails
with/without Strain Relief Function

248 – 249

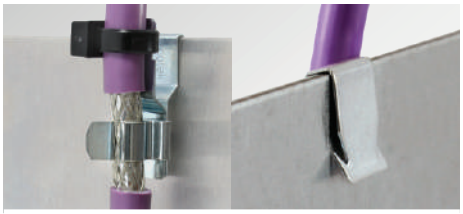


EMC Shield Clamps
for 10 × 3 mm Bus Bars
with/without Strain Relief Function

250 – 255

EMC Shield Clamps
for 30 mm C-Rails
with/without Strain Relief Function

256 – 259

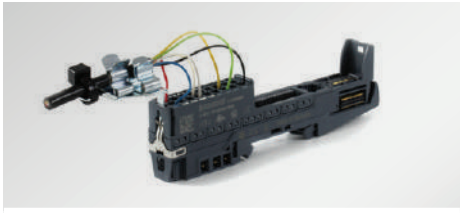


EMC Shield Clamps
for Assembly on Sheet Edges
with/without Strain Relief Function

260 – 263

Shield Clamps
for Printed Circuit Boards

264

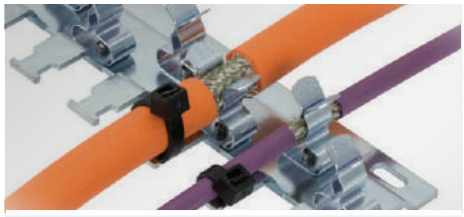


Shield Clamps
for Decentralized Bus Modules

265 – 267

Assortment of SKL Shield Clamps
EMC ServiceBox Multi
EMC ServiceBox

268 – 269

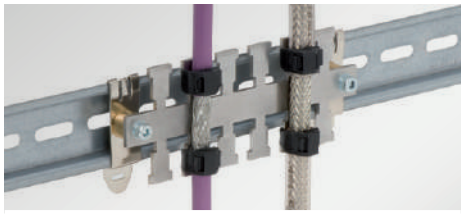


EMC Shield Clamp Assemblies
for Screw Assembly, C-Rails, Top Hat Rails, with/without Strain Relief Function

270 – 273

EMC Grounding Mounts
as Accessories for Cable Entry Components

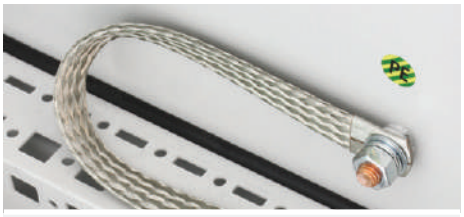
274 – 276



EMC Strain Relief Plates
Various Mounting Types

Shield Plate
for ZL Strain Relief Plates

278 – 279



Grounding Straps
for Assembly with Screws

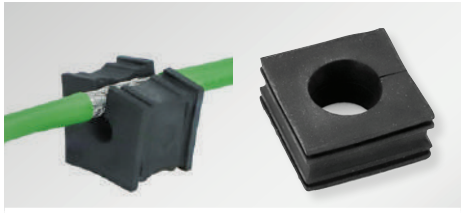
280 – 283

EMC Split Cable Entry Frames
for Cable Diameters up to 35 mm

290 – 293

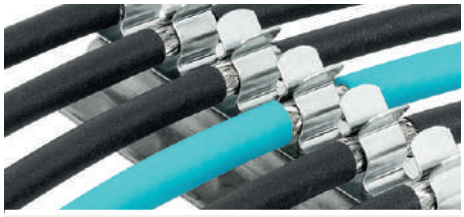
EMC Split Cable Gland
for Screw-On Assembly with a Locknut
M32, M63
for Cable Diameters up to 35 mm

294 – 295



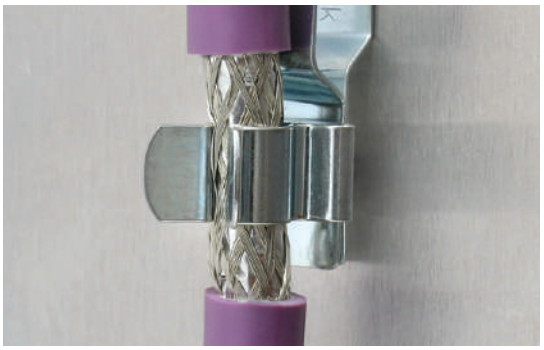
Split EMC Grommets
for Cables with and without Connectors
for Cable Diameters 2 to 33 mm

296 – 297



EMC Configurator
www.icotek.com/emc

EMC
Test Results



Leakage and Impedance

All icotek shield clamps have been tested utilizing various frequency ranges and in all tests there was minimal leakage resistance.

icotek EMC shield clamps are proven to absorb electromagnetic interferences.

Electrical impedance values:
- from 10 kHz to 100 MHz under 20 Ohm
- up to 1.000 MHz under 120 Ohm

The unique design of icotek shield clamps effectively reduce high frequency interferences.

Contact Area

The SKL shield clamps offer a large contact area to the cable shield (see figure A).

In comparison to conventional shield clamps, an up to 50% higher contact area is achieved when using the SKL product line.

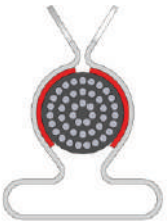


Figure A: SKL-line

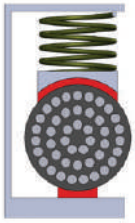
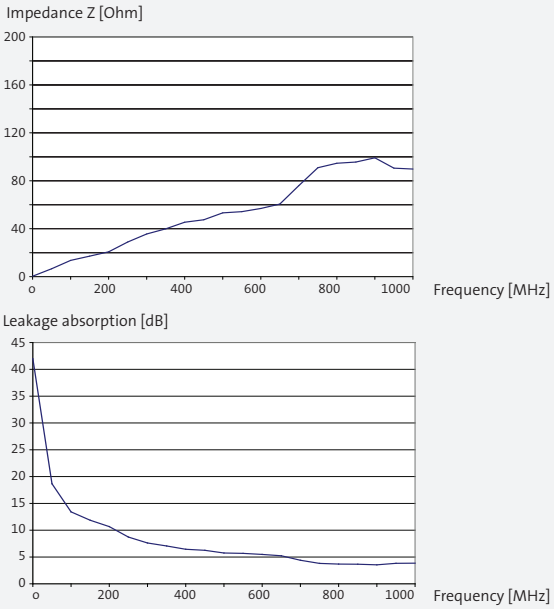
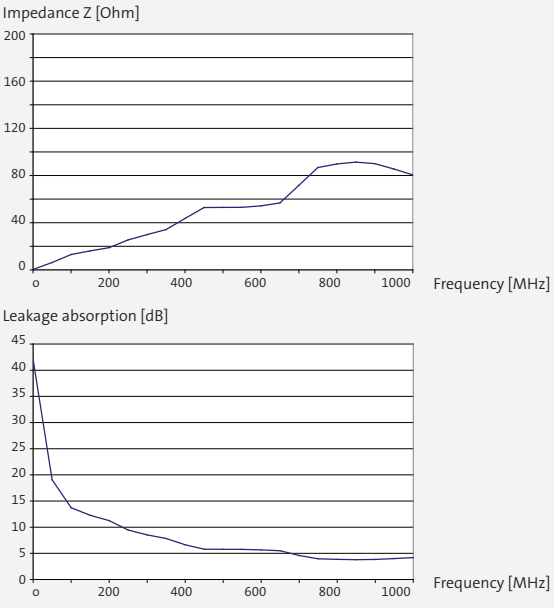


Figure B: Conventional systems

LF|SKL 8-11



SF|SKL 6-8



EMC Shield Clamps
for Assembly with Rivets

MSKL

Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Due to its special design, the clamping ranges of the MSKL are very large while the dimensions are comparatively small. (Example: MSKL 3-12, assembled with a 12 mm cable shield: width 26.25 mm).

Assembly

The shield clamps can be mounted using rivets.

Advantages & Benefits

- Large clamping areas, therefore less product sizes needed to cover a large cable diameter range
- Space-saving design, even when fully assembled
- Partially with integrated strain relief
- Large cable shield contact area
- Easy assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Shock and vibration resistant, maintenance free

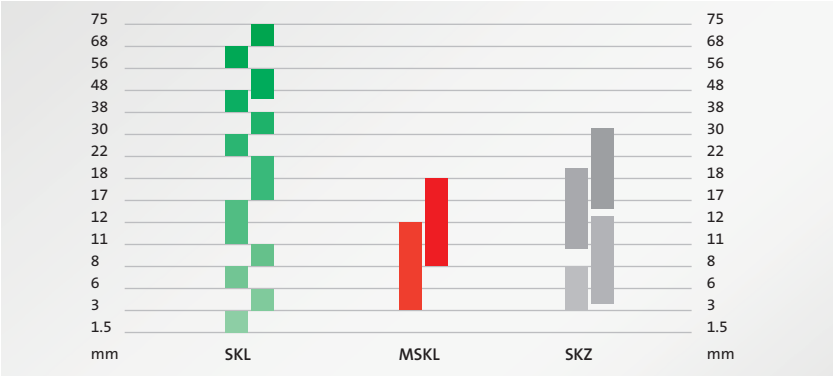
Specifications

Material

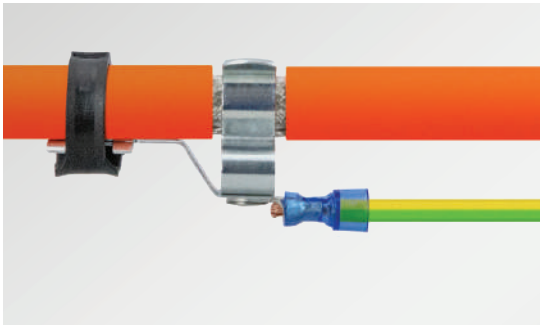
MSKL clamp, SK clamp	Spring steel, galvanized
* SKL 30–38 mm, SKL 38–48 mm	Stainless steel

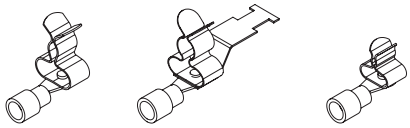
	Clamping range	MSKL single Order No.	SKL single Order No.
MSKL	3 – 12 mm 0.118 – 0.472"	37600	–
MSKL	8 – 18 mm 0.315 – 0.709"	37602	–
SKL	1.5 – 3 mm 0.059 – 0.118"	–	36200
SKL	3 – 6 mm 0.118 – 0.236"	–	36202
SKL	6 – 8 mm 0.236 – 0.315"	–	36204
SKL	8 – 11 mm 0.315 – 0.433 "	–	36205
SKL	11 – 17 mm 0.433 – 0.669"	–	36206
SKL	17 – 22 mm 0.669 – 0.866"	–	36207
SKL	22 – 30 mm 0.866 – 1.181"	–	36208
SKL	30 – 38 mm ** 1.181 – 1.496"	–	36209 *
SKL	38 – 48 mm ** 1.496 – 1.89"	–	36213 *
SKL	44 – 56 mm 1.732 – 2.205"	–	36216 *
SKL	56 – 68 mm 2.205 – 2.677"	–	36217 *
SKL	68 – 75 mm 2.677 – 2.953"	–	36218 *
	PU	50	50 | * 5

Clamping Ranges SKL | MSKL | SKZ



EMC Shield Clamps on Cable Lugs
for Assembly with Rivets





Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Assembly

The shield clamps can be mounted using rivets.

Advantages & benefits

- Integrated strain relief function
- Large contact area
- Simple and tool-free mounting, easy assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Shock and vibration resistant, maintenance free
- Designed for high density applications

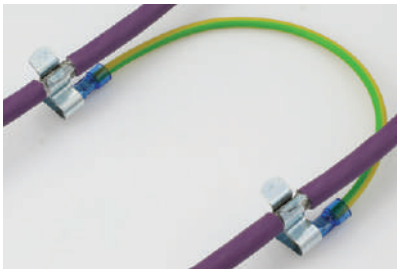
Specifications

Material

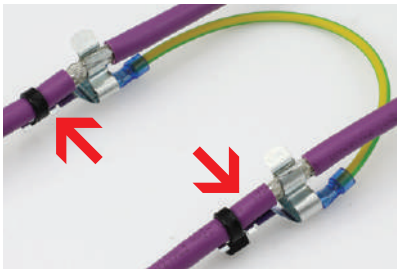
MSKL clamp, SK clamp	Spring steel, galvanized
Cable lug	UL listed

	Clamping range	RCL	RCL|MSKL Order No.	RCLZ|MSKL with cable fixation Order No.	RCL|SKL Order No.
MSKL	3 – 12 mm 0.118 – 0.472"	0.5 – 1.5 mm²	36296.2	36301.2	–
	3 – 12 mm 0.118 – 0.472"	1.0 – 2.5 mm²	36297.2	36302.2	–
	3 – 12 mm 0.118 – 0.472"	4 – 6 mm²	36298.2	36303.2	–
SKL	1.5 – 3 mm 0.059 – 0.118"	0.5 – 1.5 mm²	–	–	36296.1
	1.5 – 3 mm 0.059 – 0.118"	1.0 – 2.5 mm²	–	–	36297.1
	1.5 – 3 mm 0.059 – 0.118"	4 – 6 mm²	–	–	36298.1
	3 – 6 mm 0.118 – 0.236"	1.0 – 2.5 mm²	–	–	36297.3
	6 – 8 mm 0.236 – 0.315"	1.0 – 2.5 mm²	–	–	36297.4
	8 – 11 mm 0.315 – 0.433"	1.0 – 2.5 mm²	–	–	36297.5
	PU		25	25	25

Applications in which both cable shields must be brought to the same potential



Example for an application with RCL|MSKL 3-12



Example for an application with RCLZ|MSKL 3-12. The contacted electrical cables are also fixed.

MB|MSKL
Ground Straps with fitted Shield Clamps with/without Cable Fixation

The ground straps are fitted with a shield clamp at one end. This solution is used where space is limited.

The ground straps are available with M4 or M6 holes.

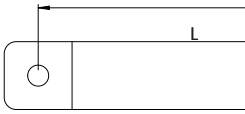
Advantages & benefits

- Very flexible assembly
- Installation even in places that are difficult to access
- Earthing tapes with pressed-on connecting end pads
- Standard products, short delivery times
- UL listed ground strapss

Specifications

Material Ground straps:
Copper tin-plated
with pressed-on connecting end pads
Shield clamp MSKL: Spring steel galvanized

Type	Order No.	Length L [mm]	Cross-section mm²	Hole size	Clamping range [mm]	PU
Cross-section 6 mm²						
MB 100 | 6 | M4+M4 | MSKL 3-12	32695.01	100	6 0.236"	M4	3 – 12 0.118 – 0.472"	10
MB 100 | 6 | M4+M4 | MSKL 8-18	32695.02	100	6 0.236"	M4	8 – 18 0.315 – 0.709"	10
MB 100 | 6 | M4+M4 | Z-MSKL 3-12*	32695.011	100	6 0.236"	M4	3 – 12 0.118 – 0.472"	10
MB 100 | 6 | M4+M4 | Z-MSKL 8-18*	32695.021	100	6 0.236"	M4	8 – 18 0.315 – 0.709"	10
MB 150 | 6 | M4+M4 | MSKL 3-12	39710.01	150	6 0.236"	M4	3 – 12 0.118 – 0.472"	10
MB 150 | 6 | M4+M4 | MSKL 8-18	39710.02	150	6 0.236"	M4	8 – 18 0.315 – 0.709"	10
MB 150 | 6 | M4+M4 | Z-MSKL 3-12*	39710.011	150	6 0.236"	M4	3 – 12 0.118 – 0.472"	10
MB 150 | 6 | M4+M4 | Z-MSKL 8-18*	39710.021	150	6 0.236"	M4	8 – 18 0.315 – 0.709"	10
MB 200 | 6 | M4+M4 | MSKL 3-12	32707.01	200	6 0.236"	M4	3 – 12 0.118 – 0.472"	10
MB 200 | 6 | M4+M4 | MSKL 8-18	32707.02	200	6 0.236"	M4	8 – 18 0.315 – 0.709"	10
MB 200 | 6 | M4+M4 | Z-MSKL 3-12*	32707.011	200	6 0.236"	M4	3 – 12 0.118 – 0.472"	10
MB 200 | 6 | M4+M4 | Z-MSKL 8-18*	32707.021	200	6 0.236"	M4	8 – 18 0.315 – 0.709"	10
Cross-section 10 mm²						
MB 100 | 10 | M6+M4 | MSKL 3-12	39711.01	100	10 0.394"	M6	3 – 12 0.118 – 0.472"	10
MB 100 | 10 | M6+M4 | MSKL 8-18	39711.02	100	10 0.394"	M6	8 – 18 0.315 – 0.709"	10
MB 100 | 10 | M6+M4 | Z-MSKL 3-12*	39711.011	100	10 0.394"	M6	3 – 12 0.118 – 0.472"	10
MB 100 | 10 | M6+M4 | Z-MSKL 8-18*	39711.021	100	10 0.394"	M6	8 – 18 0.315 – 0.709"	10



Ground strap with shield clamp MSKL and cable fixation

Ground strap with shield clamp MSKL

* with cable fixation

EMC Shield Clamps
for Assembly with Screws
with Strain Relief Function

LFZ-U|SKL

Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Optional strain relief function: the cable is fixed via the cable jacket using cable ties.

Shield clamps are easily attached to mounting plates via screw. The shield clamp LFZ-U|SKL is available for M4 or M5 screws. During assembly it is sufficient to loosen the existing screw slightly to be able to slide the clamp underneath before re-tightening the screw.

Assembly

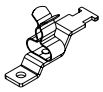
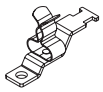
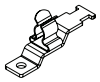
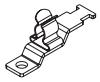
The shield clamps can be mounted using screws, e.g. on a mounting plate.

Advantages & Benefits

- Integrated strain relief function
- Large cable shield contact area
- Easy, tool-less assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Designed for high density applications
- Shock and vibration resistant, maintenance free
- Double strain relief: acc. to PROFINET installation guidelines

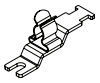
Specifications

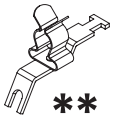
MSKL clamp, SKL clamp	Spring steel, zinc plated
LFZ foot	Steel, galvanically zinc plated fixing hole 4.2 mm/5.2 mm/ 6.2 mm
SK bracket	Steel, galvanically zinc plated

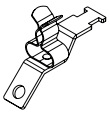
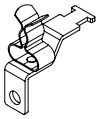
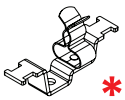





	Clamping range	LFZ-M|MSKL Fixing hole M4 Order No.	LFZ-M|MSKL Fixing hole M6 Order No.	LFZ|SKL Fixing hole M4 Order No.	LFZ|SKL Fixing hole M6 Order No.
MSKL	3 – 12 mm 0.118 – 0.472"	37612	37373	–	–
	8 – 18 mm 0.315 – 0.709"	37614	37388	–	–
SKL	1.5 – 3 mm 0.059 – 0.118"	–	–	36910	37701
	3 – 6 mm 0.118 – 0.236"	–	–	36915	37702
	6 – 8 mm 0.236 – 0.315"	–	–	36920	37703
	8 – 11 mm 0.315 – 0.433"	–	–	36925	37704
	11 – 17 mm 0.433 – 0.669"	–	–	36930	37705
	17 – 22 mm 0.669 – 0.866"	–	–	36935	37706
	22 – 30 mm 0.866 – 1.181"	–	–	36940	37707
	30 – 38 mm 1.181 – 1.496"	–	–	36941	37708
	PU	10	10	10	10

EMC Shield Clamps
for Assembly with Screws
with Strain Relief Function





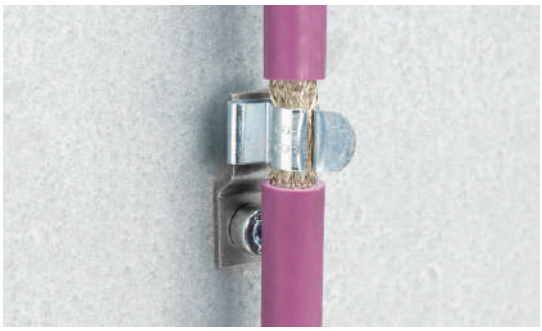
		LFZ-U|SKL Fixing hole M4	LFZ-U|SKL Fixing hole M5	LFZ-U-AB Fixing hole M4	LFZ-M(45°)|MSKL Fixing hole M5	LFZ-M(90°)|MSKL Fixing hole M5	LF2Z-M|MSKL Fixing hole M4	SKZ Fixing hole M4
	Clamping range	Order No.	Order No.	Order No.	Order No.	Order No.	Order No.	Order No.
MSKL	3 – 12 mm 0.118 – 0.472"	–	–	–	37660.1	37661.1	37665.150	–
MSKL	8 – 18 mm 0.315 – 0.709"	–	–	–	37660.2	37661.2	37666.150	–
SKL	1.5 – 3 mm 0.059 – 0.118"	36886.1	36887.1	–	–	–	–	–
SKL	3 – 6 mm 0.118 – 0.236"	36886.2	36887.2	–	–	–	–	–
SKL	6 – 8 mm 0.236 – 0.315"	36886.3	36887.3	36948.3	–	–	–	–
SKL	8 – 11 mm 0.315 – 0.433"	36886.4	36887.4	36948.4	–	–	–	–
SKL	11 – 17 mm 0.433 – 0.669"	36886.5	36887.5	–	–	–	–	–
SKL	17 – 22 mm 0.669 – 0.866"	–	–	–	–	–	37590.150	–
SKL	22 – 30 mm 0.866 – 1.181"	–	–	–	–	–	37591.150	–
SK/SKZ	3 – 8 mm 0.118 – 0.315"	–	–	–	–	–	–	36222
SK/SKZ	4 – 13.5 mm 0.157 – 0.531"	–	–	–	–	–	–	36224
SK/SKZ	10 – 20 mm 0.394 – 0.787"	–	–	–	–	–	–	–
SK/SKZ	15 – 32 mm 0.591 – 1.26"	–	–	–	–	–	–	–
	PU	10	10	10	10	10	10	10

* with double strain relief function

**

LFZ-U-AB are especially suitable for mounting on Allen Bradley Powerflex 525/527 frequency inverters. Direct contacting on the converter saves space and interference signals are picked up directly at the interference source.

EMC Shield Clamps
for Assembly with Screws
without Strain Relief Function



LF|SKL

Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Optional strain relief function: the cable is fixed via the cable jacket using cable ties.

Shield clamps are easily attached to mounting plates via screw. The shield clamp LFZ-U|SKL is available for M4 or M5 screws. During assembly it is sufficient to loosen the existing screw slightly to be able to slide the clamp underneath before re-tightening the screw.

Assembly

The shield clamps can be mounted using screws, e.g. on a mounting plate.

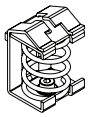
Advantages & Benefits

- Large cable shield contact area
- Easy, tool-less assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Designed for high density applications
- Shock and vibration resistant, maintenance free

Specifications

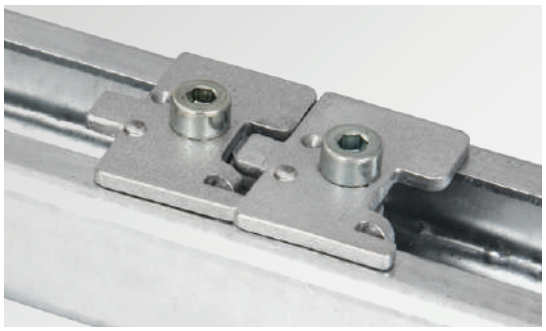
Material

MSKL clamp, SKL clamp	Spring steel, zinc plated
LF/LFZ foot	Steel, galvanically zinc plated fixing hole 4.2 mm/5.2 mm
SK bracket	Steel, galvanically zinc plated



	Clamping range	LF|MSKL Fixing hole M4 Order No.	LF|MSKL Fixing hole M5 Order No.	LF|SKL Fixing hole M4 Order No.	SK Fixing hole M4 Order No.
MSKL	3 – 12 mm 0.118 – 0.472"	37608	37374	–	–
	8 – 18 mm 0.315 – 0.709"	37610	37375	–	–
SKL	1.5 – 3 mm 0.059 – 0.118"	–	–	36251	–
	3 – 6 mm 0.118 – 0.236"	–	–	36253	–
	6 – 8 mm 0.236 – 0.315"	–	–	36255	–
	8 – 11 mm 0.315 – 0.433"	–	–	36256	–
	11 – 17 mm 0.433 – 0.669"	–	–	36257	–
	17 – 22 mm 0.669 – 0.866"	–	–	36258	–
	22 – 30 mm 0.866 – 1.181"	–	–	36259	–
SK/SKZ	3 – 8 mm 0.118 – 0.315"	–	–	–	36222.002
	4 – 13.5 mm 0.157 – 0.531"	–	–	–	36224.002
	10 – 20 mm 0.394 – 0.787"	–	–	–	36226
	15 – 32 mm 0.591 – 1.26"	–	–	–	36228
	PU	10	10	10	10

Mounting Feet and Accessories
for EMC Shield Clamps



SC mounting foot for C-rail with twist protection notch

Maximum flexibility in all mounting areas

The mounting and screw feet listed here are used in combination with EMC shield clamps on the following pages. They can also be ordered individually, see table on the right.

The bus bar can also be ordered in special lengths.

Specifications

Material

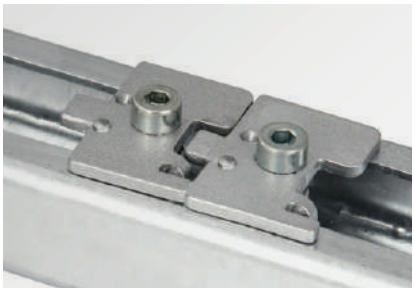
SF foot	Spring steel
SFS foot	Spring steel
SC foot	Sheet steel, galvanically zinc plated
Bus bar	Cu, tin plated, current load 140 A

SF single | SFS single | SC single

Type	Order No.		PU
SF single M4	36230	Mounting foot, single, for 35 mm top hat DIN rails with screw thread M4	10
SF single M5	36221	Mounting foot, single, for 35 mm top hat DIN rails with screw thread M5	10
SFS single	36229	Mounting foot, single, for 35 mm top hat DIN rails	10
SC single	36231	SC foot single, for 30 mm DIN-rail shape C (width of mouth: 16 mm) with twist protection notch	10
SC single	36220	SC foot single for C-rail	10

Mounting foot SF single for 35 mm top hat DIN rails

Mounting foot SFS single for 35 mm top hat DIN rails



SC single for C-rail with twist protection notch (36231)

SC single for C-rail (36220)

Bus bar 10 × 3 mm

Type		Order No.	PU
Bus bar 10 × 3 mm	10 × 3 × 1000 mm*	36100	1

** Other lengths available on request*

EMC Shield Clamps
for TS35 Rails
with Strain Relief Function

SFZ-M|MSKL

Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Optional strain relief function: the cable is fixed via the cable jacket using cable ties.

Assembly

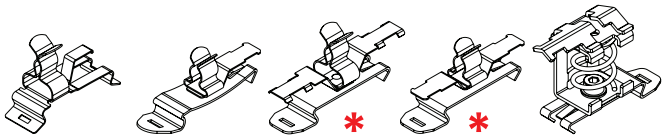
The shield clamps can be mounted on 35 mm rails TS35.

Advantages & Benefits

- Integrated strain relief function
- Large cable shield contact area
- Easy, tool-less assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Designed for high density applications
- Shock and vibration resistant, maintenance free
- Double strain relief: acc. to PROFINET installation guidelines

Specifications

MSKL clamp, SKL clamp	Spring steel, zinc plated
SF/SFZ foot	Spring steel
SK bracket	Steel, galvanically zinc plated



		SFZ-M|MSKL	SFZ|SKL	SF2Z-M|MSKL	SF2Z|SKL	SF|SKZ
	Clamping range	Order No.	Order No.	Order No.	Order No.	Order No.
MSKL	3 – 12 mm 0.118 – 0.472 "	37620	–	37620.150	–	–
MSKL	8 – 18 mm 0.315 – 0.709 "	37622	–	37622.150	–	–
SKL	1.5 – 3 mm 0.059 – 0.118 "	–	36850	–	36850.150	–
SKL	3 – 6 mm 0.118 – 0.236 "	–	36855	–	36855.150	–
SKL	6 – 8 mm 0.236 – 0.315 "	–	36860	–	36860.150	–
SKL	8 – 11 mm 0.315 – 0.433 "	–	36865	–	36865.150	–
SKL	11 – 17 mm 0.433 – 0.669 "	–	36870	–	36870.150	–
SKL	17 – 22 mm 0.669 – 0.866 "	–	36875	–	36875.150	–
SKL	22 – 30 mm 0.866 – 1.181 "	–	36880	–	36880.150	–
SKL	30 – 38 mm 1.181 – 1.496 "	–	36885	–	–	–
SKZ	3 – 8 mm 0.118 – 0.315 "	–	–	–	–	36500
SKZ	4 – 13.5 mm 0.157 – 0.531 "	–	–	–	–	36502
	PU	10	10	10	10	10

✱ with double strain relief function

EMC Shield Clamps
for TS35 Rails
without Strain Relief Function

SFS|SKL

Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Assembly

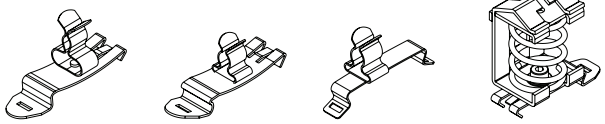
The shield clamps can be mounted on 35 mm rails TS35.

Advantages & Benefits

- Large cable shield contact area
- Easy, tool-less assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Designed for high density applications
- Shock and vibration resistant, maintenance free

Specifications

MSKL clamp, SKL clamp	Spring steel, zinc plated
SF/SFZ foot	Spring steel
SK bracket	Steel, galvanically zinc plated



		SF-M|MSKL	SF|SKL	SFS|SKL	SF|SK
	Clamping range	Order No.	Order No.	Order No.	Order No.
MSKL	3 – 12 mm 0.118 – 0.472 "	37616	–	–	–
MSKL	8 – 18 mm 0.315 – 0.709 "	37618	–	–	–
SKL	1.5 – 3 mm 0.059 – 0.118 "	–	36243	36810	–
SKL	3 – 6 mm 0.118 – 0.236 "	–	36244	36815	–
SKL	6 – 8 mm 0.236 – 0.315 "		36245	36820	
SKL	8 – 11 mm 0.315 – 0.433 "	–	36246	–	–
SKL	11 – 17 mm 0.433 – 0.669 "	–	36247	–	–
SKL	17 – 22 mm 0.669 – 0.866 "	–	36248	–	–
SKL	22 – 30 mm 0.866 – 1.181 "	–	36249	–	–
SKL	30 – 38 mm 1.181 – 1.496 "	–	36250	–	–
SKL	38 – 48 mm 1.496 – 1.89 "	–	36252	–	–
SK	3 – 8 mm 0.118 – 0.315 "	–	–	–	36500.002
SK	4 – 13.5 mm 0.157 – 0.531 "	–	–	–	36502.002
SK	10 – 20 mm 0.394 – 0.787 "	–	–	–	36504
SK	15 – 32 mm 0.591 – 1.26 "	–	–	–	36506
	PU	10	10	10	10

EMC shield clamps
for 10 × 3 mm bus bars
with strain relief function

With this generation of shield clamps for the bus bar, the clamp sits directly above the bus bar. This saves space in the alignment direction of the electrical cables.

Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Optional strain relief function: the cable is fixed via the cable jacket using cable ties.

Assembly

The shield clamps are mounted by snapping them onto a 10 × 3 mm bus bar.

Benefits

- Designed for high density applications
- Large cable shield contact area
- Easy, tool-free assembly

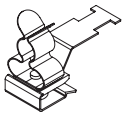
Features

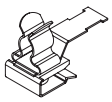
- Integrated strain relief function
- Shock and vibration resistant, maintenance free

Specifications

Material

MSKL-clamp, SKL-clamp	Spring steel, zinc plated
PFZ-foot	Spring steel, zinc plated
Bus bar	Cu, tin plated, current load 140 A





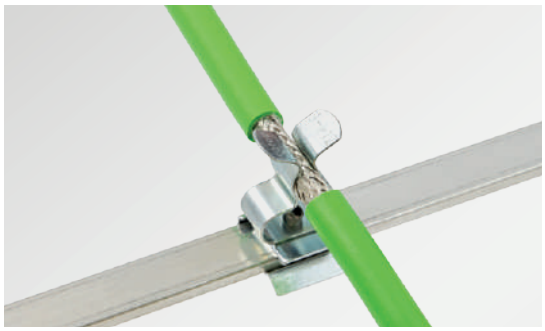
	Clamping range	PFZ-M|MSKL Order No.	PFZ|SKL Order No.
MSKL	3 – 12 mm	37716	–
	8 – 18 mm	37717	–
SKL	1.5 – 3 mm	–	37712.1
	3 – 6 mm	–	37712.2
	6 – 8 mm	–	37712.3
	8 – 11 mm	–	37712.4
	11 – 17 mm	–	37712.5
	PU	10	10

Bus bar 10 × 3 mm

Type		Order No.	PU
Bus bar 10 × 3 mm	10 × 3 × 1000 mm*	36100	1

* Other lengths available on request

EMC shield clamps
for 10 × 3 mm bus bars
without strain relief function



With this generation of shield clamps for the bus bar, the clamp sits directly above the bus bar. This saves space in the alignment direction of the electrical cables.

Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Assembly

The shield clamps are mounted by snapping them onto a 10 × 3 mm bus bar.

Benefits

- Designed for high density applications
- Large cable shield contact area
- Easy, tool-free assembly

Features

- Shock and vibration resistant, maintenance free

Specifications

Material

MSKL-clamp, SKL-clamp	Spring steel, zinc plated
PF-foot	Spring steel, zinc plated

		PF|MSKL	PF|SKL	PFS|SCL
	Clamping range	Order No.	Order No.	Order No.
MSKL	3 – 12 mm	37714	–	–
MSKL	8 – 18 mm	37715	–	–
SKL	1.5 – 3 mm	–	37710.1	36611
SKL	3 – 6 mm	–	37710.2	36612
SKL	6 – 8 mm	–	37710.3	–
SKL	8 – 11 mm	–	37710.4	–
SKL	11 – 17 mm	–	37710.5	–
	PU	10	10	10

EMC Shield Clamps
for 10 × 3 mm Bus Bars
with Strain Relief Function

PFSZ-M|MSKL

Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Optional strain relief function: the cable is fixed via the cable jacket using cable ties.

Assembly

The shield clamps can be mounted on 10 × 3 mm bus bars.

Advantages & Benefits

- Integrated strain relief function
- Large cable shield contact area
- Easy, tool-less assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Designed for high density applications
- Shock and vibration resistant, maintenance free
- Double strain relief: acc. to PROFINET installation guidelines

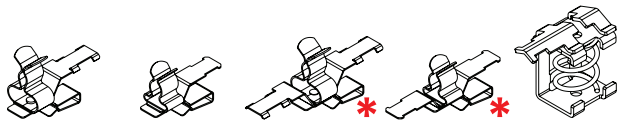
Specifications

Material

MSKL-clamp, SKL-clamp	Spring steel, zinc plated
PFS-foot	Spring steel
SK-bracket	Sheet steel, galvanically zinc plated
Bus bar	Cu, tin plated, current load 140 A

Suitable for

KEL-EMV-PF cable assembly bracket	275
MF Supports for bus bars	359



		PFSZ-M|MSKL	PFSZ|SKL	PFS2Z-M|MSKL	PFS2Z|SKL	SS|SKZ
	Clamping range	Order No.	Order No.	Order No.	Order No.	Order No.
MSKL	3 – 12 mm 0.118 – 0.472 "	37630	–	37630.150	–	–
	8 – 18 mm 0.315 – 0.709 "	37632	–	37632.150	–	–
SKL	1.5 – 3 mm 0.059 – 0.118 "	–	36787.1	–	36787.151	–
	3 – 6 mm 0.118 – 0.236 "	–	36787.2	–	36787.152	–
	6 – 8 mm 0.236 – 0.315 "	–	36787.3	–	36787.153	–
	8 – 11 mm 0.315 – 0.433 "	–	36787.4	–	36787.154	–
	11 – 17 mm 0.433 – 0.669 "	–	36787.5	–	36787.155	–
	17 – 22 mm 0.669 – 0.866 "	–	36787.6	–	36787.156	–
SKZ	3 – 8 mm 0.118 – 0.315 "	–	–	–	–	36235
	4 – 13.5 mm 0.157 – 0.531 "	–	–	–	–	36236
	PU	10	10	10	10	10

* with double strain relief function

Bus bar 10 × 3 mm

Type		Order No.	PU
Bus bar 10 × 3 mm	10 × 3 × 1000 mm*	36100	1

* Other lengths available on request

EMC Shield Clamps
for 10 × 3 mm Bus Bars
without Strain Relief Function

PFS|SKL

Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Assembly

The shield clamps can be mounted on 10 × 3 mm bus bars.

Advantages & Benefits

- Large cable shield contact area
- Easy, tool-less assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Designed for high density applications
- Shock and vibration resistant, maintenance free

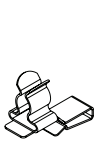
Specifications

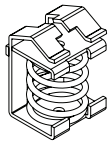
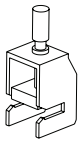
Material

MSKL-clamp,	
SKL-clamp	Spring steel, zinc plated
PFS-foot	Spring steel
SK-bracket	Sheet steel, galvanically zinc plated
Bus bar	Cu, tin plated, current load 140 A

Suitable for

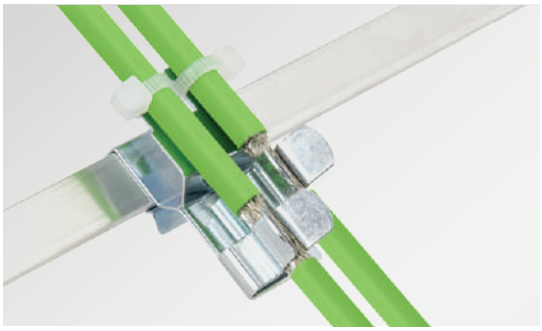
KEL-EMV-PF cable assembly bracket	275
MF Supports for bus bars	359



		PFS|SKL	PFS|SCL	SS|SK	SKS
	Clamping range	Order No.	Order No.	Order No.	Order No.
SKL	1.5 – 3 mm 0.059 – 0.118 "	36786.1	36611	–	–
	3 – 6 mm 0.118 – 0.236 "	36786.2	36612	–	–
	6 – 8 mm 0.236 – 0.315 "	36786.3	–	–	–
	8 – 11 mm 0.315 – 0.433 "	36786.4	–	–	–
	11 – 17 mm 0.433 – 0.669 "	36786.5	–	–	–
	17 – 22 mm 0.669 – 0.866 "	36786.6	–	–	–
SK	3 – 8 mm 0.118 – 0.315 "	–	–	36235.002	–
	4 – 13.5 mm 0.157 – 0.531 "	–	–	36236.002	–
	10 – 20 mm 0.394 – 0.787 "	–	–	36237	–
	15 – 32 mm 0.591 – 1.26 "	–	–	36238	–
SKS	2 – 5 mm 0.079 – 0.197 "	–	–	–	36282
	3 – 8 mm 0.118 – 0.315 "	–	–	–	36283
	3 – 14 mm 0.118 – 0.551 "	–	–	–	36284
	3 – 20 mm 0.118 – 0.787 "	–	–	–	36285
	5 – 28 mm 0.197 – 1.102 "	–	–	–	36286
	20 – 35 mm 0.787 – 1.378 "	–	–	–	36287
	PU	10	10	10	10

EMC Double Shield Clamps
for 10 × 3 mm Bus Bars
with Strain Relief Function



PFSZ2|SKL

Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Optional strain relief function: the cable is fixed via the cable jacket using cable ties.

Assembly

The shield clamps can be mounted on 10 × 3 mm bus bars.

Advantages & Benefits

- Integrated strain relief function
- Large cable shield contact area
- Easy, tool-less assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Designed for high density applications
- Shock and vibration resistant, maintenance free

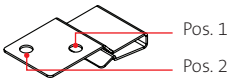
Specifications

Material

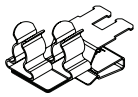
MSKL-clamp, SKL-clamp	Spring steel, zinc plated
PFS-foot	Spring steel
Bus bar	Cu, tin plated, current load 140 A

Accessories

Bus bar	250
MF Supports for bus bars	359



PFS2-foot

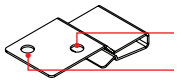


PFSZ2|SKL

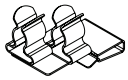
	Clamping range Pos. 1	Clamping range Pos. 2	Order No.
SKL	blank	1.5 – 3 mm 0.059 – 0.118 "	36789.01
	blank	3 – 6 mm 0.118 – 0.236 "	36789.02
	blank	6 – 8 mm 0.236 – 0.315 "	36789.03
	blank	8 – 11 mm 0.315 – 0.433 "	36789.04
	1.5 – 3 mm 0.059 – 0.118 "	blank	36789.10
	1.5 – 3 mm 0.059 – 0.118 "	1.5 – 3 mm 0.059 – 0.118 "	36789.11
	1.5 – 3 mm 0.059 – 0.118 "	3 – 6 mm 0.118 – 0.236 "	36789.12
	1.5 – 3 mm 0.059 – 0.118 "	6 – 8 mm 0.236 – 0.315 "	36789.13
	1.5 – 3 mm 0.059 – 0.118 "	8 – 11 mm 0.315 – 0.433 "	36789.14
	3 – 6 mm 0.118 – 0.236 "	blank	36789.20
	3 – 6 mm 0.118 – 0.236 "	1.5 – 3 mm 0.059 – 0.118 "	36789.21
	3 – 6 mm 0.118 – 0.236 "	3 – 6 mm 0.118 – 0.236 "	36789.22
	3 – 6 mm 0.118 – 0.236 "	6 – 8 mm 0.236 – 0.315 "	36789.23
	3 – 6 mm 0.118 – 0.236 "	8 – 11 mm 0.315 – 0.433 "	36789.24
	6 – 8 mm 0.236 – 0.315 "	blank	36789.30
	6 – 8 mm 0.236 – 0.315 "	1.5 – 3 mm 0.059 – 0.118 "	36789.31
	6 – 8 mm 0.236 – 0.315 "	3 – 6 mm 0.118 – 0.236 "	36789.32
	6 – 8 mm 0.236 – 0.315 "	6 – 8 mm 0.236 – 0.315 "	36789.33
	6 – 8 mm 0.236 – 0.315 "	8 – 11 mm 0.315 – 0.433 "	36789.34
	8 – 11 mm 0.315 – 0.433 "	blank	36789.40
	8 – 11 mm 0.315 – 0.433 "	1.5 – 3 mm 0.059 – 0.118 "	36789.41
	8 – 11 mm 0.315 – 0.433 "	3 – 6 mm 0.118 – 0.236 "	36789.42
	8 – 11 mm 0.315 – 0.433 "	6 – 8 mm 0.236 – 0.315 "	36789.43
	PU		10

EMC Double Shield Clamps
for 10 × 3 mm Bus Bars
without Strain Relief Function

PFS2|SKL



PFS2-foot



Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Assembly

The shield clamps can be mounted on 10 × 3 mm bus bars.

Specifications

Material

MSKL-clamp,	
SKL-clamp	Spring steel, zinc plated
PFS-foot	Spring steel
Bus bar	Cu, tin plated, current load 140 A

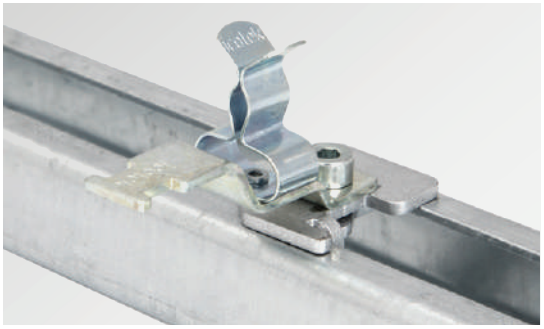
Accessories

Bus bar	250
MF Supports for bus bars	359

PFS2|SKL

	Clamping range Pos. 1	Clamping range Pos. 2	Order No.
SKL	blank	1.5 – 3 mm 0.059 – 0.118 "	36788.01
	blank	3 – 6 mm 0.118 – 0.236 "	36788.02
	blank	6 – 8 mm 0.236 – 0.315 "	36788.03
	blank	8 – 11 mm 0.315 – 0.433 "	36788.04
	1.5 – 3 mm 0.059 – 0.118 "	blank	36788.10
	1.5 – 3 mm 0.059 – 0.118 "	1.5 – 3 mm 0.059 – 0.118 "	36788.11
	1.5 – 3 mm 0.059 – 0.118 "	3 – 6 mm 0.118 – 0.236 "	36788.12
	1.5 – 3 mm 0.059 – 0.118 "	6 – 8 mm 0.236 – 0.315 "	36788.13
	1.5 – 3 mm 0.059 – 0.118 "	8 – 11 mm 0.315 – 0.433 "	36788.14
	3 – 6 mm 0.118 – 0.236 "	blank	36788.20
	3 – 6 mm 0.118 – 0.236 "	1.5 – 3 mm 0.059 – 0.118 "	36788.21
	3 – 6 mm 0.118 – 0.236 "	3 – 6 mm 0.118 – 0.236 "	36788.22
	3 – 6 mm 0.118 – 0.236 "	6 – 8 mm 0.236 – 0.315 "	36788.23
	3 – 6 mm 0.118 – 0.236 "	8 – 11 mm 0.315 – 0.433 "	36788.24
	6 – 8 mm 0.236 – 0.315 "	blank	36788.30
	6 – 8 mm 0.236 – 0.315 "	1.5 – 3 mm 0.059 – 0.118 "	36788.31
	6 – 8 mm 0.236 – 0.315 "	3 – 6 mm 0.118 – 0.236 "	36788.32
	6 – 8 mm 0.236 – 0.315 "	6 – 8 mm 0.236 – 0.315 "	36788.33
	6 – 8 mm 0.236 – 0.315 "	8 – 11 mm 0.315 – 0.433 "	36788.34
	8 – 11 mm 0.315 – 0.433 "	blank	36788.40
	8 – 11 mm 0.315 – 0.433 "	1.5 – 3 mm 0.059 – 0.118 "	36788.41
	8 – 11 mm 0.315 – 0.433 "	3 – 6 mm 0.118 – 0.236 "	36788.42
	8 – 11 mm 0.315 – 0.433 "	6 – 8 mm 0.236 – 0.315 "	36788.43
PU			10

EMC Shield Clamps
for 30 mm C-Rails
with Strain Relief Function



SC|LFZ-M|MSKL

Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Optional strain relief function: the cable is fixed via the cable jacket using cable ties.

Assembly

The shield clamps can be mounted on 30 mm C-rails using the SC mounting foot (included in the shipment).

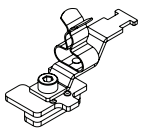
Advantages & Benefits

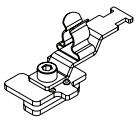
- Integrated strain relief function
- Large cable shield contact area
- Easy, tool-less assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Designed for high density applications
- Shock and vibration resistant, maintenance free
- Double strain relief: acc. to PROFINET installation guidelines
- For mounting on all common C-rails with an opening dimension of 16–17 mm

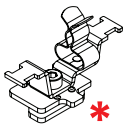
Specifications

Material

MSKL-clamp, SKL-clamp	Spring steel, zinc plated
LFZ foot	Sheet steel, galvanically zinc plated Fixing hole M4
SC foot	Sheet steel, galvanically zinc plated
SK-bracket	Sheet steel, galvanically zinc plated







		SC|LFZ-M|MSKL Fixing hole M4	SC|LFZ|SKL Fixing hole M4	SC|LF2Z-M|MSKL Fixing hole M4	SC|SKZ
	Clamping range	Order No.	Order No.	Order No.	Order No.
MSKL	3 – 12 mm 0.118 – 0.472 "	37612.100	–	37612.150	–
MSKL	8 – 18 mm 0.315 – 0.709 "	37614.100	–	37614.150	–
SKL	1.5 – 3 mm 0.059 – 0.118 "	–	36910.100	–	–
SKL	3 – 6 mm 0.118 – 0.236 "	–	36915.100	–	–
SKL	6 – 8 mm 0.236 – 0.315 "	–	36920.100	–	–
SKL	8 – 11 mm 0.315 – 0.433 "	–	36925.100	–	–
SKL	11 – 17 mm 0.433 – 0.669 "	–	36930.100	–	–
SKL	17 – 22 mm 0.669 – 0.866 "	–	36935.100	37594.150	–
SKL	22 – 30 mm 0.866 – 1.181 "	–	36940.100	37595.150	–
SKL	30 – 38 mm 1.181 – 1.496 "	–	36941.100	–	–
SKZ	3 – 8 mm 0.118 – 0.315 "	–	–	–	36696
SKZ	4 – 13.5 mm 0.157 – 0.531 "	–	–	–	36700
	PU	10	10	10	10

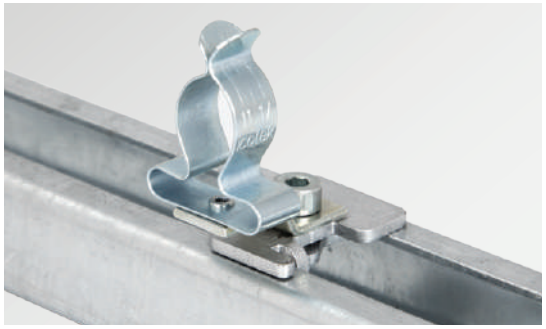
* with double strain relief function

SC foot single for C-rail
PU: 10, **Order No. 36220**

Screw-foot loose, for 30 mm DIN-rail shape C (width of mouth: 16 – 17 mm) with twist protection notch
PU: 10, **Order No. 36231**

SC-foot: space-saving design enables high cable density. Mounting foot adjusts itself when tightening the screw.

EMC Shield Clamps
for 30 mm C-Rails
without Strain Relief Function



SC|LF|SKL

Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Assembly

The shield clamps can be mounted on 30 mm C-rails using the SC mounting foot (included in the shipment).

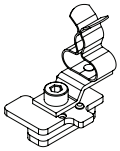
Advantages & Benefits

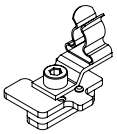
- Large cable shield contact area
- Easy, tool-less assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Designed for high density applications
- Shock and vibration resistant, maintenance free

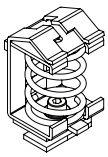
Specifications

Material

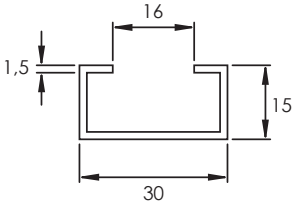
MSKL-clamp, SKL-clamp	Spring steel, zinc plated
LFZ foot	Sheet steel, galvanically zinc plated Fixing hole M4
SC foot	Sheet steel, galvanically zinc plated
SK-bracket	Sheet steel, galvanically zinc plated







	Clamping range	SC|LF|MSKL Fixing hole M4 Order No.	SC|LF|SKL Fixing hole M4 Order No.	SC|SK Order No.
MSKL	3 – 12 mm 0.118 – 0.472 "	37608.100	–	–
	8 – 18 mm 0.315 – 0.709 "	37610.100	–	–
SKL	1.5 – 3 mm 0.059 – 0.118 "	–	36251.100	–
	3 – 6 mm 0.118 – 0.236 "	–	36253.100	–
	6 – 8 mm 0.236 – 0.315 "	–	36255.100	–
	8 – 11 mm 0.315 – 0.433 "	–	36256.100	–
	11 – 17 mm 0.433 – 0.669 "	–	36257.100	–
	17 – 22 mm 0.669 – 0.866 "	–	36258.100	–
	22 – 30 mm 0.866 – 1.181 "	–	36259.100	–
SK	3 – 8 mm 0.118 – 0.315 "	–	–	36696.002
	4 – 13.5 mm 0.157 – 0.531 "	–	–	36700.002
	10 – 20 mm 0.394 – 0.787 "	–	–	36704
	15 – 32 mm 0.591 – 1.26 "	–	–	36708
	PU	10	10	10



C-rail dimensions (mm)

EMC Shield Clamps for Cable Clamps
for 30 mm C-rails

LFC|MSKL

The LFC shield clamp offers a space-saving solution for mounting on the C-rail.

The shield clamp LFC contacts the cable shield directly on the C-rail while the use of the existing cable clamp provides the strain relief.

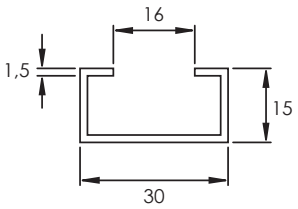
Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Advantages & Benefits

- Suitable for clamps that are mounted on C-rails
- Easy, tool-less assembly
- Space-saving assembly
- Large clamping range 3 – 30 mm
- Large cable shield contact area
- Shield contacting and strain relief are separated from each other
- For mounting on all common C-rails with an opening dimension of 16–17 mm

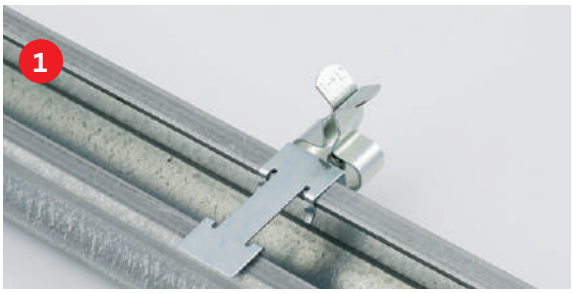
Specifications

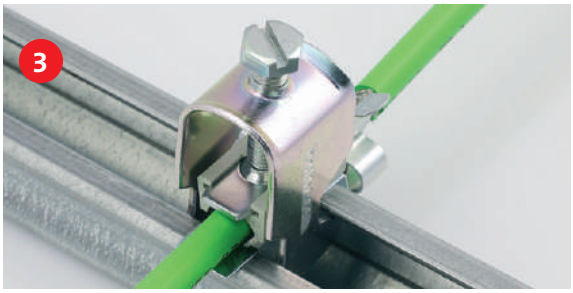
Material Spring steel galvanized



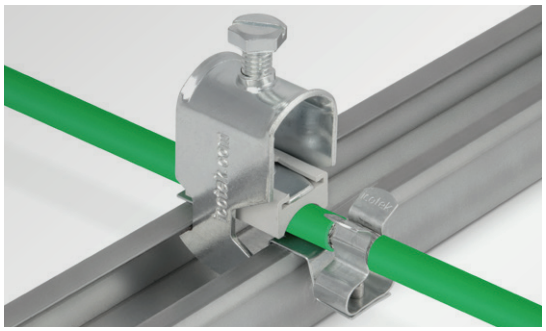
C-rail dimensions (mm)

		LFC|MSKL	LFC|SKL
	Clamping range	Order No.	Order No.
MSKL	3 – 12 mm 0.118 – 0.472"	37670.100	–
MSKL	8 – 18 mm 0.315 – 0.709"	37671.100	–
SKL	17 – 22 mm 0.669 – 0.866"	–	37672.100
SKL	22 – 30 mm 0.866 – 1.181"	–	37673.100
	PU	10	10

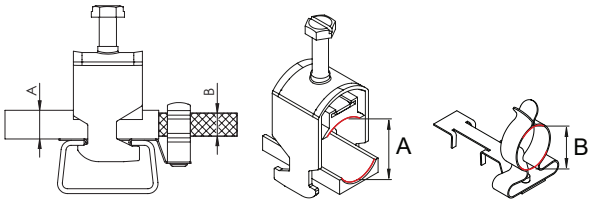




Set of EMC Shield Clamps and Cable Clamps
for 30 mm C-Rails



CC-LFC|MSKL



Type	Clamping range A Cable clamp (⌀ on the cable sheath)	Clamping range B Shield clamp (⌀ on the cable shield)		Order No.	PU
CC-LFC 6-13 | MSKL 3-12	6 – 13 mm 0.236 – 0.512	3 – 12 mm 0.118 – 0.472"		37680	10
CC-LFC 12-19 | MSKL 8-18	12 – 19 mm 0.472 – 0.748"	8 – 18 mm 0.315 – 0.709"		37681	10
CC-LFC 18-23 | SKL 17-22	18 – 23 mm 0.708 – 0.906"	17 – 22 mm 0.669 – 0.866"		37682	10
CC-LFC 22-32 | SKL 22-30	23 – 32 mm 0.906 – 1.260"	22 – 30 mm 0.866 – 1.181"		37683	10
CC-LFC 30-38 | SKL 30-38	32 – 38 mm 1.260 – 1.496"	30 – 38 mm 1.181 – 1.496"		37688	10
CC-LFC 38-42 | SKL 30-38	38 – 42 mm 1.496 – 1.654"	30 – 38 mm 1.181 – 1.496"		37684	10
CC-LFC 42-50 | SKL 38-48	42 – 50 mm 1.654 – 1.969"	38 – 48 mm 1.496 – 1.890"		37685	10
CC-LFC 50-64 | SKL 44-56	50 – 64 mm 1.969 – 2.520"	44 – 56 mm 1.732 – 2.205"		37686	10
CC-LFC 50-64 | SKL 56-68	50 – 64 mm 1.969 – 2.520"	56 – 68 mm 2.205 – 2.677"		37687	10
CC-LFC-RK 6-13 | MSKL 3-12 with textured knob	6 – 13 mm 0.236 – 0.512	3 – 12 mm 0.118 – 0.472"	NEW	37680.100	10
CC-LFC-RK 12-19 | MSKL 8-18 with textured knob	12 – 19 mm 0.472 – 0.748"	8 – 18 mm 0.315 – 0.709"	NEW	37681.100	10
CC-LFC-RK 18-23 | SKL 17-22 with textured knob	18 – 23 mm 0.708 – 0.906"	17 – 22 mm 0.669 – 0.866"	NEW	37682.100	10
CC-LFC-RK 22-32 | SKL 22-30 with textured knob	23 – 32 mm 0.906 – 1.260"	22 – 30 mm 0.866 – 1.181"	NEW	37683.100	10

Set consisting of EMC shield clamp LFC and matching cable clamp.

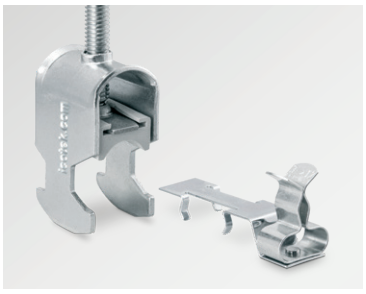
The shield clamp LFC contacts the cable shield directly on the C-rail while the cable clamp provides the strain relief. The combination of two products helps to save space in the enclosure.

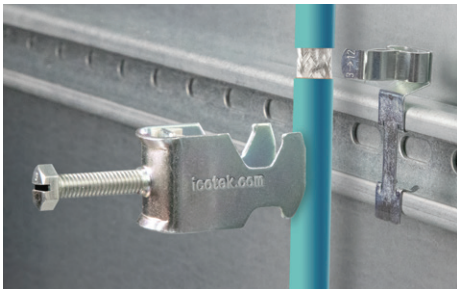
Advantages & Benefits

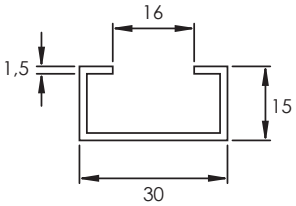
- Space-saving due to the combination of the LFC shield clamp with a cable clamp
- Practical set consisting of shield clamp and matching cable clamp
- Quick and easy assembly, particularly user-friendly with a textured knob
- Large clamping range 3 – 30 mm
- Large cable shield contact area
- Shield contacting and strain relief are separated from each other
- For mounting on all common C-rails with an opening dimension of 16–17 mm

Specifications

Material
LFC: Spring steel galvanized
Cable clamp: Steel galvanized
Textured knob: Thermoplastic

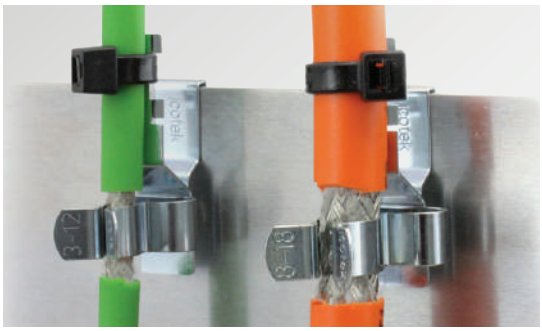


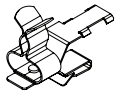
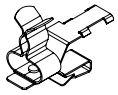
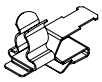
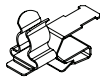




C-rail dimensions (mm)

EMC Shield Clamps
for Assembly on Sheet Edges
with Strain Relief Function



		PFKZ-A-M|MSKL for sheet thickness 1.5 – 2 mm	PFKZ-B-M|MSKL for sheet thickness 2 – 3 mm	PFKZ-A|SKL for sheet thickness 1.5 – 2 mm	PFKZ-B|SKL for sheet thickness 2 – 3 mm
	Clamping range	Order No.	Order No.	Order No.	Order No.
MSKL	3 – 12 mm 0.118 – 0.472 "	37640	37650	–	–
	8 – 18 mm 0.315 – 0.709 "	37642	37652	–	–
SKL	1.5 – 3 mm 0.059 – 0.118 "	–	–	36779.1	36783.1
	3 – 6 mm 0.118 – 0.236 "	–	–	36779.2	36783.2
	6 – 8 mm 0.236 – 0.315 "	–	–	36779.3	36783.3
	8 – 11 mm 0.315 – 0.433 "	–	–	36779.4	36783.4
	11 – 17 mm 0.433 – 0.669 "	–	–	36779.5	36783.5
	17 – 22 mm 0.669 – 0.866 "	–	–	36779.6	36783.6
	22 – 30 mm 0.866 – 1.181 "	–	–	36779.7	36783.7
	PU	10	10	10	10

Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Optional strain relief function: the cable is fixed via the cable jacket using cable ties.

Assembly

The shield clamps are used where a screw connection is either not possible or wanted. It is simply clamped onto the sheet edge. The claws provide a secure grip, even in case of vibrations.

Advantages & Benefits

- Integrated strain relief function
- Large cable shield contact area
- Easy, tool-less assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Designed for high density applications
- Maintenance free

Specifications

Material

SKL-clamp	Spring steel, zinc plated
PFKZ foot	Spring steel

Type A:	For wall/sheet thickness 1.5 – 2 mm
Type B:	For wall/sheet thickness 2 – 3 mm

EMC Shield Clamps
for Assembly on Sheet Edges
without Strain Relief Function

Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Assembly

The shield clamps are used where a screw connection is either not possible or wanted. It is simply clamped onto the sheet edge. The claws provide a secure grip, even in case of vibrations.

Advantages & Benefits

- Large cable shield contact area
- Easy, tool-less assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Designed for high density applications
- Maintenance free

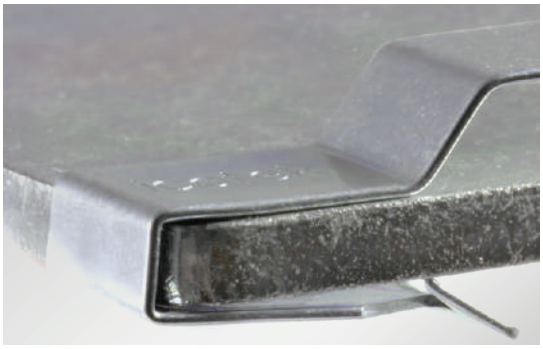
Specifications

Material

SKL-clamp	Spring steel, zinc plated
PFKZ foot	Spring steel

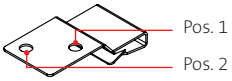
Type A:	For wall/sheet thickness 1.5 – 2 mm
Type B:	For wall/sheet thickness 2 – 3 mm

	Clamping range	PFK-A|SKL Blechkanten Stärke 1.5 – 2 mm Order No.	PFK-B|SKL Blechkanten Stärke 2 – 3 mm Order No.
SKL	1.5 – 3 mm 0.059 – 0.118 "	36778.1	36782.1
	3 – 6 mm 0.118 – 0.236 "	36778.2	36782.2
	6 – 8 mm 0.236 – 0.315 "	36778.3	36782.3
	8 – 11 mm 0.315 – 0.433 "	36778.4	36782.4
	11 – 17 mm 0.433 – 0.669 "	36778.5	36782.5
	17 – 22 mm 0.669 – 0.866 "	36778.6	36782.6
	22 – 30 mm 0.866 – 1.181 "	36778.7	36782.7
	PU	10	10

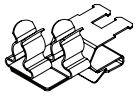


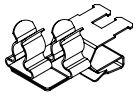
Secure grip on metal sheets due to mounting claws

EMC Double Shield Clamps
for Assembly on Sheet Edges
with Strain Relief Function



PFK2-foot





Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Optional strain relief function: the cable is fixed via the cable jacket using cable ties.

Assembly

The shield clamps are used where a screw connection is either not possible or wanted. It is simply clamped onto the sheet edge. The claws provide a secure grip, even in case of vibrations.

Advantages & Benefits

- Integrated strain relief function
- Large cable shield contact area
- Easy, tool-less assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Designed for high density applications
- Maintenance free

Specifications

Material

SKL-clamp	Spring steel, zinc plated
PFKZ foot	Spring steel

Type A:	For wall/sheet thickness 1.5 – 2 mm
Type B:	For wall/sheet thickness 2 – 3 mm

	Clamping range Pos. 1	Clamping range Pos. 2	PFKZ2-A|SKL for sheet thickness 1.5 – 2 mm Order No.	PFKZ2-B|SKL for sheet thickness 2 – 3 mm Order No.
SKL	blank	1.5 – 3 mm 0.059 – 0.118 "	36781.01	36785.01
	blank	3 – 6 mm 0.118 – 0.236 "	36781.02	36785.02
	blank	6 – 8 mm 0.236 – 0.315 "	36781.03	36785.03
	blank	8 – 11 mm 0.315 – 0.433 "	36781.04	36785.04
	1.5 – 3 mm 0.059 – 0.118 "	blank	36781.10	36785.10
	1.5 – 3 mm 0.059 – 0.118 "	1.5 – 3 mm 0.059 – 0.118 "	36781.11	36785.11
	1.5 – 3 mm 0.059 – 0.118 "	3 – 6 mm 0.118 – 0.236 "	36781.12	36785.12
	1.5 – 3 mm 0.059 – 0.118 "	6 – 8 mm 0.236 – 0.315 "	36781.13	36785.13
	1.5 – 3 mm 0.059 – 0.118 "	8 – 11 mm 0.315 – 0.433 "	36781.14	36785.14
	3 – 6 mm 0.118 – 0.236 "	blank	36781.20	36785.20
	3 – 6 mm 0.118 – 0.236 "	1.5 – 3 mm 0.059 – 0.118 "	36781.21	36785.21
	3 – 6 mm 0.118 – 0.236 "	3 – 6 mm 0.118 – 0.236 "	36781.22	36785.22
	3 – 6 mm 0.118 – 0.236 "	6 – 8 mm 0.236 – 0.315 "	36781.23	36785.23
	3 – 6 mm 0.118 – 0.236 "	8 – 11 mm 0.315 – 0.433 "	36781.24	36785.24
	6 – 8 mm 0.236 – 0.315 "	blank	36781.30	36785.30
	6 – 8 mm 0.236 – 0.315 "	1.5 – 3 mm 0.059 – 0.118 "	36781.31	36785.31
	6 – 8 mm 0.236 – 0.315 "	3 – 6 mm 0.118 – 0.236 "	36781.32	36785.32
	6 – 8 mm 0.236 – 0.315 "	6 – 8 mm 0.236 – 0.315 "	36781.33	36785.33
	6 – 8 mm 0.236 – 0.315 "	8 – 11 mm 0.315 – 0.433 "	36781.34	36785.34
	8 – 11 mm 0.315 – 0.433 "	blank	36781.40	36785.40
	8 – 11 mm 0.315 – 0.433 "	1.5 – 3 mm 0.059 – 0.118 "	36781.41	36785.41
	8 – 11 mm 0.315 – 0.433 "	3 – 6 mm 0.118 – 0.236 "	36781.42	36785.42
	8 – 11 mm 0.315 – 0.433 "	6 – 8 mm 0.236 – 0.315 "	36781.43	36785.43
	PU		10	10

EMC Double Shield Clamps
for Assembly on Sheet Edges
without Strain Relief Function

Whenever a cable shielding is required with the possibility of grounding, EMC shield clamps can be used. Shield clamps are easy to use and effective in dissipating conducted disturbances.

Assembly

The shield clamps are used where a screw connection is either not possible or wanted. It is simply clamped onto the sheet edge. The claws provide a secure grip, even in case of vibrations.

Advantages & Benefits

- Integrated strain relief function
- Large cable shield contact area
- Easy, tool-less assembly
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Designed for high density applications
- Maintenance free

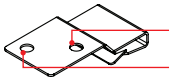
Specifications

Material

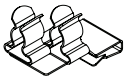
SKL-clamp	Spring steel, zinc plated
PFKZ foot	Spring steel

Type A:	For wall/sheet thickness 1.5 – 2 mm
Type B:	For wall/sheet thickness 2 – 3 mm

Secure grip on metal sheets due to mounting claws



PFK2-foot



	Clamping range Pos. 1	Clamping range Pos. 2	PFK2-A|SKL for sheet thickness 1.5 – 2 mm Order No.	PFK2-B|SKL for sheet thickness 2 – 3 mm Order No.
SKL	blank	1.5 – 3 mm 0.059 – 0.118 "	36780.01	36784.01
	blank	3 – 6 mm 0.118 – 0.236 "	36780.02	36784.02
	blank	6 – 8 mm 0.236 – 0.315 "	36780.03	36784.03
	blank	8 – 11 mm 0.315 – 0.433 "	36780.04	36784.04
	1.5 – 3 mm 0.059 – 0.118 "	blank	36780.10	36784.10
	1.5 – 3 mm 0.059 – 0.118 "	1.5 – 3 mm 0.059 – 0.118 "	36780.11	36784.11
	1.5 – 3 mm 0.059 – 0.118 "	3 – 6 mm 0.118 – 0.236 "	36780.12	36784.12
	1.5 – 3 mm 0.059 – 0.118 "	6 – 8 mm 0.236 – 0.315 "	36780.13	36784.13
	1.5 – 3 mm 0.059 – 0.118 "	8 – 11 mm 0.315 – 0.433 "	36780.14	36784.14
	3 – 6 mm 0.118 – 0.236 "	blank	36780.20	36784.20
	3 – 6 mm 0.118 – 0.236 "	1.5 – 3 mm 0.059 – 0.118 "	36780.21	36784.21
	3 – 6 mm 0.118 – 0.236 "	3 – 6 mm 0.118 – 0.236 "	36780.22	36784.22
	3 – 6 mm 0.118 – 0.236 "	6 – 8 mm 0.236 – 0.315 "	36780.23	36784.23
	3 – 6 mm 0.118 – 0.236 "	8 – 11 mm 0.315 – 0.433 "	36780.24	36784.24
	6 – 8 mm 0.236 – 0.315 "	blank	36780.30	36784.30
	6 – 8 mm 0.236 – 0.315 "	1.5 – 3 mm 0.059 – 0.118 "	36780.31	36784.31
	6 – 8 mm 0.236 – 0.315 "	3 – 6 mm 0.118 – 0.236 "	36780.32	36784.32
	6 – 8 mm 0.236 – 0.315 "	6 – 8 mm 0.236 – 0.315 "	36780.33	36784.33
	6 – 8 mm 0.236 – 0.315 "	8 – 11 mm 0.315 – 0.433 "	36780.34	36784.34
	8 – 11 mm 0.315 – 0.433 "	blank	36780.40	36784.40
	8 – 11 mm 0.315 – 0.433 "	1.5 – 3 mm 0.059 – 0.118 "	36780.41	36784.41
	8 – 11 mm 0.315 – 0.433 "	3 – 6 mm 0.118 – 0.236 "	36780.42	36784.42
	8 – 11 mm 0.315 – 0.433 "	6 – 8 mm 0.236 – 0.315 "	36780.43	36784.43
PU			10	10

PCB|SKL
EMC Shield Clamps for Printed Circuit Boards

PCB|SKL shield clamps are easy to use and effective in grounding single cable shields.

PCB|SKL consist of SKL clamps, fixed on a soldering foot that enables assembly on printed circuit boards. There are various designs to choose from.

Advantages & Benefits

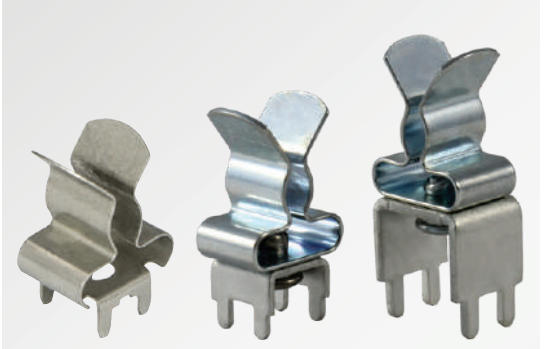
- The spring design requires no adjustments and will permanently maintain contact to the cable shield
- Large contact area

Specifications

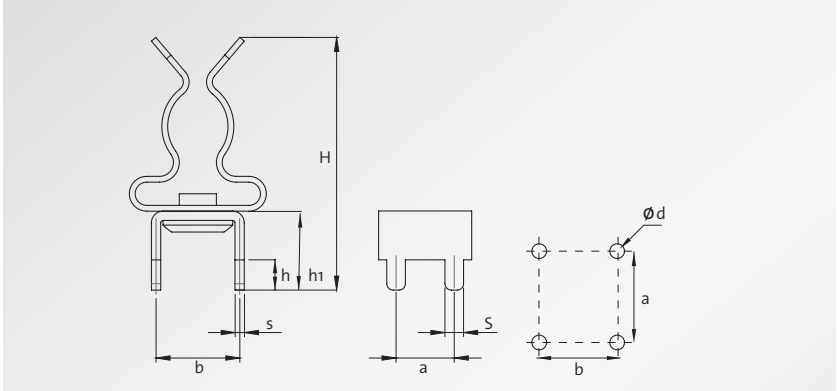
Material

SKL-clamp	Spring steel, zinc plated
PCB-foot	Brass, tin plated
SKL-clamp	
PCB-ET-4-V-4,1|SKL 3-6	Spring steel, tin plated

Type	Order No.	Height H [mm]	Height h1 [mm]	Width s [mm]	Pin h [mm]	Pin S [mm]	Grid a x b [mm]	Drill-hole d [mm]	PU
PCB-4-V-6,8|MSKL 3-12 Clamping range 3–12 mm	37306	27	6.8 0.268 "	0.8 0.031 "	2.6 0.102 "	1.6 0.063 "	**5 x 7.2** 0.197 x 0.283 "	Ø 1.8 0.071 "	10
PCB-4-V-6,8|SKL 1.5-3 Clamping range 1.5 - 3 mm 0.059 - 0.118 "	36650.1	20	6.8 0.268 "	0.8 0.031 "	2.6 0.102 "	1.6 0.063 "	**5 x 7.2** 0.197 x 0.283 "	Ø 1.8 0.071 "	10
PCB-4-V-6,8|SKL 3-6 Clamping range 3 - 6 mm 0.118 - 0.236 "	36650.2	20	6.8 0.268 "	0.8 0.031 "	2.6 0.102 "	1.6 0.063 "	**5 x 7.2** 0.197 x 0.283 "	Ø 1.8 0.071 "	10
PCB-4-V-6,8|SKL 6-8 Clamping range 6 - 8 mm 0.236 - 0.315 "	36650.3	22	6.8 0.268 "	0.8 0.031 "	2.6 0.102 "	1.6 0.063 "	**5 x 7.2** 0.197 x 0.283 "	Ø 1.8 0.071 "	10
PCB-4-V-6,8|SKL 8-11 Clamping range 8–11 mm	36650.4	27	6.8 0.268 "	0.8 0.031 "	2.6 0.102 "	1.6 0.063 "	**5 x 7.2** 0.197 x 0.283 "	Ø 1.8 0.071 "	10
PCB-4-V-12,5|SKL 1.5-3 Clamping range 1.5 - 3 mm 0.059 - 0.118 "	36656.1	25	12.5 0.492 "	1 0.039 "	4 0.157 "	1.6 0.063 "	5 x 10.1 0.197 x 0.398 "	Ø 1.8 0.071 "	10
PCB-4-V-12,5|SKL 3-6 Clamping range 3 - 6 mm 0.118 - 0.236 "	36656.2	26	12.5 0.492 "	1 0.039 "	4 0.157 "	1.6 0.063 "	5 x 10.1 0.197 x 0.398 "	Ø 1.8 0.071 "	10
PCB-4-V-12,5|SKL 6-8 Clamping range 6 - 8 mm 0.236 - 0.315 "	36656.3	27	12.5 0.492 "	1 0.039 "	4 0.157 "	1.6 0.063 "	5 x 10.1 0.197 x 0.398 "	Ø 1.8 0.071 "	10
PCB-ET-4-V-4,1|SKL 3-6 Clamping range 3 - 6 mm 0.118 - 0.236 " (one-piece)	36653.1	17.5 0.689 "	4.4	0.3 0.012 "	2.6 0.102 "	1.6 0.063 "	5 × 7.2 0.283 "	Ø 1.8 0.071 "	25



PCB-ET-4-V-4,1|SKL 3-6



STFZ|SKL
EMC Terminal Clamps for Peripheral Modules

STFZ-U|SKL

The EMC terminal clamps STFZ|SKL combine the functions strain relief, cable guidance and grounding of signal cables. Available in two versions for 1 or 2 lines.

The STFZ2|SKL is used for analog I/O modules using two actuators/sensors.

The STFZ EMC terminal clamp is compatible to bus modules listed on the left side.

For the SIMATIC ET 200SP module by Siemens icotek has developed a special terminal clamp
STFZ-SP for 1 or 2 lines.

Application terminal clamp

STFZ|SKL

- Bosch Rexroth
  IP20 Inline Module
- PHOENIX CONTACT
  All terminals of the INLINE range.
  The terminals 1.4 and 2.4 must not be used for signal I/O.
- Pilz
  All PSSu-Modules with shield terminals 13 and 23
- Siemens
  All terminals of the ET200s range.
  Terminals 4 and 8 must not be used for signal I/O.
- TURCK
  For terminals of the BL20 I/O system.
- VIPA SLIO
  All terminals of the SLIO range. Terminals 4+8 must not be used for signal I/O.
- WAGO
  All terminals of the WAGO I/O Systems 750.
  Terminals 4 and 8 must not be used for signal I/O.
- Rockwell Automation / Allen-Bradley
  Series 1734

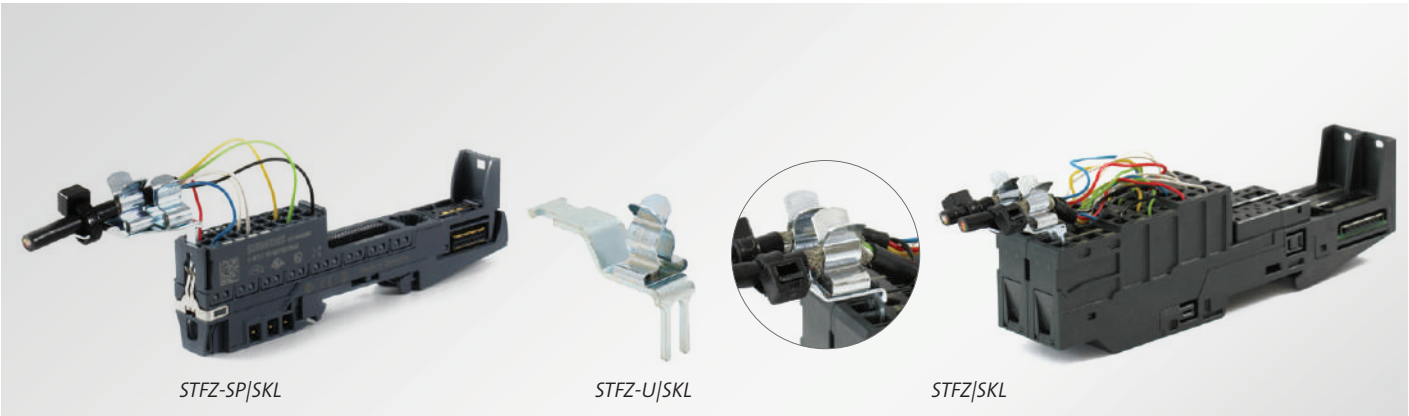
  Further manufacturers upon request.

STFZ-U|SKL

- BECKHOFF
  EL 3122, ES 3122, ES 9100, ES 9410, KL 1114, KS 2134
- OMRON
  Series NX

STFZ-SP|SKL

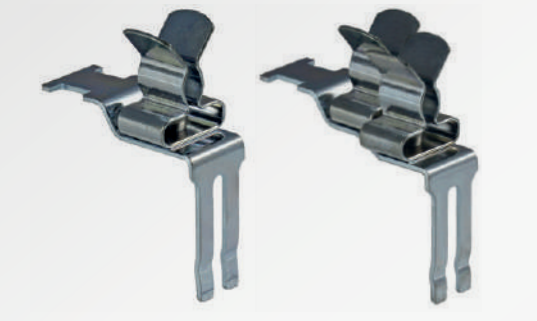
- Siemens
  SIMATIC ET 200SP



STFZ-SP|SKL *STFZ-U|SKL* *STFZ|SKL*

STFZ | STFZ2

EMC Terminal Clamps, Single and Double for Various Brands



The STFZ|SKL EMC terminal clamp provides strain relief, cable guidance and grounding for decentralized bus modules (see compatibility table page 212).

The STFZ2|SKL is used for analog I/O modules using two actuators/sensors.

The EMC shield clamps as listed below are available to mount:
SKL 1.5-3 | SKL 3-6 | SKL 6-8

Advantages & Benefits

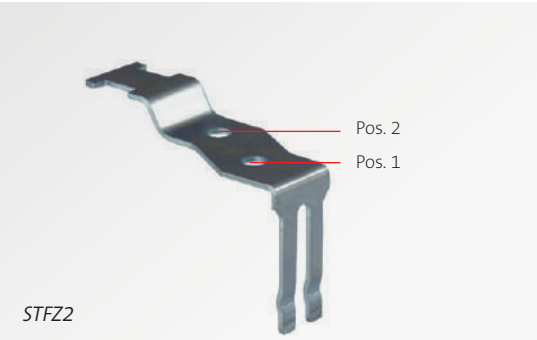
- Grounding of signal cables close to the terminal
- Strain relief and cable management directly on the bus module

Specifications

Material

SKL-clamp	Spring steel, zinc plated
STFZ-foot	Spring steel

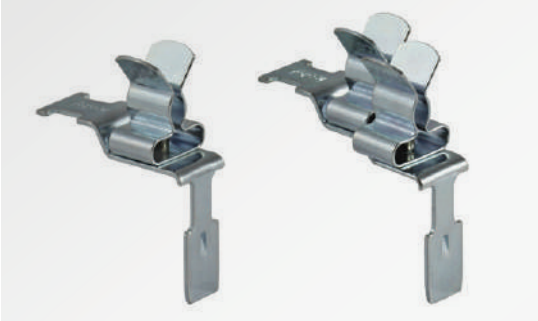
Type	Shield diameter Pos. 1	Shield diameter Pos. 2	Order No.	PU
STFZ|SKL with one shield clamp:				
STFZ|SKL 1.5-3	1.5 - 3 mm 0.059 - 0.118 "	-	37510.1	10
STFZ|SKL 3-6	3 - 6 mm 0.118 - 0.236 "	-	37510.2	10
STFZ|SKL 6-8	6 - 8 mm 0.236 - 0.315 "	-	37510.3	10
STFZ2|SKL with two shield clamps:				
STFZ2|01	blank	1.5 - 3 mm 0.059 - 0.118 "	37505.01	10
STFZ2|02	blank	3 - 6 mm 0.118 - 0.236 "	37505.02	10
STFZ2|03	blank	6 - 8 mm 0.236 - 0.315 "	37505.03	10
STFZ2|10	1.5 - 3 mm 0.059 - 0.118 "	blank	37505.10	10
STFZ2|11	1.5 - 3 mm 0.059 - 0.118 "	1.5 - 3 mm 0.059 - 0.118 "	37505.11	10
STFZ2|12	1.5 - 3 mm 0.059 - 0.118 "	3 - 6 mm 0.118 - 0.236 "	37505.12	10
STFZ2|13	1.5 - 3 mm 0.059 - 0.118 "	6 - 8 mm 0.236 - 0.315 "	37505.13	10
STFZ2|20	3 - 6 mm 0.118 - 0.236 "	blank	37505.20	10
STFZ2|21	3 - 6 mm 0.118 - 0.236 "	1.5 - 3 mm 0.059 - 0.118 "	37505.21	10
STFZ2|22	3 - 6 mm 0.118 - 0.236 "	3 - 6 mm 0.118 - 0.236 "	37505.22	10
STFZ2|23	3 - 6 mm 0.118 - 0.236 "	6 - 8 mm 0.236 - 0.315 "	37505.23	10
STFZ2|30	6 - 8 mm 0.236 - 0.315 "	blank	37505.30	10
STFZ2|31	6 - 8 mm 0.236 - 0.315 "	1.5 - 3 mm 0.059 - 0.118 "	37505.31	10
STFZ2|32	6 - 8 mm 0.236 - 0.315 "	3 - 6 mm 0.118 - 0.236 "	37505.32	10
STFZ2|33	6 - 8 mm 0.236 - 0.315 "	6 - 8 mm 0.236 - 0.315 "	37505.33	10



STFZ2

STFZ-U | STFZ-SP | STFZ2-SP

EMC Terminal Clamps, Single and Double for Siemens & Beckhoff Modules



STFZ-SP|SKL *STFZ2-SP|SKL*

The STFZ-SP|SKL EMC terminal clamp provides strain relief, cable guidance and grounding for decentralized bus modules SIMATIC ET 200SP by Siemens. STFZ2-SP|SKL is a version for analog I/O modules using two actuators/sensors. STFZ-U terminal clamps for various Beckhoff modules.

The EMC shield clamps as listed below are available to mount:
SKL 1.5-3 | SKL 3-6 | SKL 6-8

Advantages & Benefits

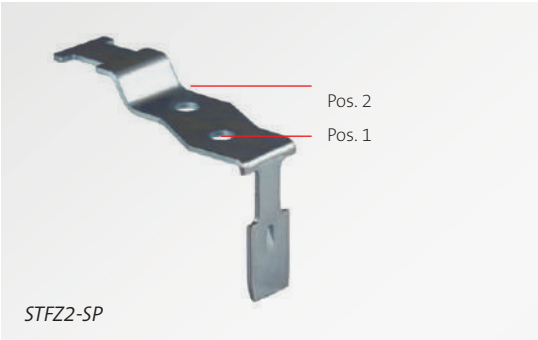
- Grounding of signal cables close to the terminal
- Strain relief and cable management directly on the bus module

Specifications

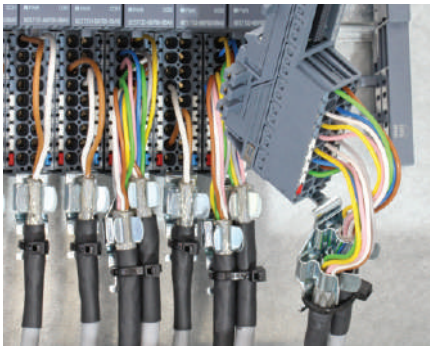
Material

SKL-clamp	Spring steel, zinc plated
STFZ-SP-foot	Spring steel

Type	Shield diameter Pos. 1 [mm]	Shield diameter Pos. 2 [mm]	Order No.	PU
STFZ-SP|SKL / STFZ-U|SKL with one shield clamp:				
STFZ-SP|SKL 1.5-3 STFZ-U|SKL 1.5-3	1.5 - 3 / 0.059 - 0.118 " 1.5 - 3 / 0.059 - 0.118 "	- -	37512.1 37514.1	10 10
STFZ-SP|SKL 3-6 STFZ-U|SKL 3-6	3 - 6 / 0.118 - 0.236 " 3 - 6 / 0.118 - 0.236 "	- -	37512.2 37514.2	10 10
STFZ-SP|SKL 6-8 STFZ-U|SKL 6-8	6 - 8 / 0.236 - 0.315 " 6 - 8 / 0.236 - 0.315 "	- -	37512.3 37514.3	10 10
STFZ2-SP with two shield clamps:				
STFZ2-SP|01	blank	1.5 - 3/ 0.059 - 0.118 "	37507.01	10
STFZ2-SP|02	blank	3 - 6 / 0.118 - 0.236 "	37507.02	10
STFZ2-SP|03	blank	6 - 8 / 0.236 - 0.315 "	37507.03	10
STFZ2-SP|10	1.5 - 3/ 0.059 - 0.118 "	blank	37507.10	10
STFZ2-SP|11	1.5 - 3/ 0.059 - 0.118 "	1.5 - 3/ 0.059 - 0.118 "	37507.11	10
STFZ2-SP|12	1.5 - 3/ 0.059 - 0.118 "	3 - 6 / 0.118 - 0.236 "	37507.12	10
STFZ2-SP|13	1.5 - 3/ 0.059 - 0.118 "	6 - 8 / 0.236 - 0.315 "	37507.13	10
STFZ2-SP|20	3 - 6 / 0.118 - 0.236 "	blank	37507.20	10
STFZ2-SP|21	3 - 6 / 0.118 - 0.236 "	1.5 - 3/ 0.059 - 0.118 "	37507.21	10
STFZ2-SP|22	3 - 6 / 0.118 - 0.236 "	3 - 6 / 0.118 - 0.236 "	37507.22	10
STFZ2-SP|23	3 - 6 / 0.118 - 0.236 "	6 - 8 / 0.236 - 0.315 "	37507.23	10
STFZ2-SP|30	6 - 8 / 0.236 - 0.315 "	blank	37507.30	10
STFZ2-SP|31	6 - 8 / 0.236 - 0.315 "	1.5 - 3/ 0.059 - 0.118 "	37507.31	10
STFZ2-SP|32	6 - 8 / 0.236 - 0.315 "	3 - 6 / 0.118 - 0.236 "	37507.32	10
STFZ2-SP|33	6 - 8 / 0.236 - 0.315 "	6 - 8 / 0.236 - 0.315 "	37507.33	10



STFZ2-SP



STFZ-U|SKL

EMC ServiceBox *multi*

Service Box with Asssorted MSKL Shield Clamps

The suitable EMC clamp is always readily available!
The EMC ServiceBox multi is very universal, especially when the cable diameter is unknown in advance. With the new ServiceBox multi you always have the right size on hand.

The EMC ServiceBox multi is perfect for installations and service calls. Retrofitting and maintenance can be carried out easily and quickly.

Content*

MSKL / SKL for TS35 DIN rails:	
Type SFZ-M|MSKL - sizes: 8 - 18 mm	**10 × MSKL**
Type SFZ-M|MSKL - sizes: 3 - 12 mm	**20 × MSKL**
Type SFZ|SKL - sizes: 1.5 - 3 mm	**10 × SKL**
MSKL / SKL for assembly via screws:	
Type LFZ-M|MSKL - sizes: 8 - 18 mm	**10 × MSKL**
Type LFZ-M|MSKL - sizes: 3 - 12 mm	**20 × MSKL**
Type LFZ|SKL - sizes: 1.5 - 3 mm	**10 × SKL**
MSKL for 10 × 3 mm bus bar:	
Type PFSZ-M|MSKL - sizes: 3 - 12 mm	**10 × MSKL**
MSKL / SKL for clipping on metal sheets:	
Type PFKZ-B|SKL 22	**2 × SKL**
SKL for decentralized bus modules:	
Type STFZ|SKL - sizes: 3 - 6 mm	**6 × SKL**
SKL for clipping on metal sheets	
Typ PFKZ-B|SKL 1,5-3 mm	**3 x SKL**
Typ PFKZ-B|SKL 3-6 mm	**3 x SKL**
Typ PFKZ-B|SKL 6-8 mm	**3 x SKL**
EMC - Accessories:	
RLFZ - Clamp assembly 5× SKL	**1 piece**

* Subject to alterations

Description	Order No.	PU
EMC ServiceBox *multi*	88006	1

EMC ServiceBox

Service Box with Asssorted SKL Shield Clamps

The suitable EMC clamp is always readily available!
The EMC ServiceBox is perfect for installations and service calls. Retrofitting and maintenance can be carried out easily and quickly.

Content*

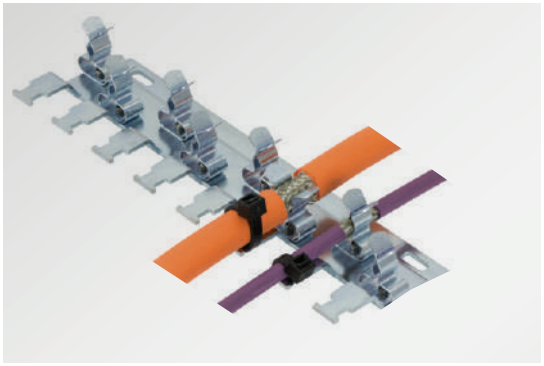
SKL for TS35 DIN rails:	
Type SFZ|SKL - sizes: 1.5 - 17 mm	**15 × SKL**
Type SFS|SKL - sizes: 1.5 - 8 mm	**6 × SKL**
SFZ-M|MSKL - sizes: 3-18 mm	**4 × SKL**
SKL for assembly via screws:	
Type LFZ|SKL - sizes: 1.5 - 17 mm	**21 × SKL**
Type LFZ-U4|SKL - sizes: 1.5-11 mm	**8 × SKL**
Type LFZ-M|MSKL - sizes: 3-18 mm	**4 × SKL**
SKL for 10 × 3 bus bar:	
Type PFSZ2|SKL 11	**1 × SKL**
Type PFSZ2|SKL 22	**1 × SKL**
Type PFSZ2|SKL 33	**1 × SKL**
SKL for clipping on metal sheets:	
Type PFSZ|SKL - sizes: 1.5 - 11 mm	**15 × SKL**
Type PFSZ-M|MSKL - sizes: 3-18 mm	**4 × SKL**
SKL for decentralized bus modules:	
STFZ|SKL - sizes: 3 - 6 mm	**1 × SKL**
STFZ2|SKL 23	**1 × SKL**
SKL for Siemens module ET 200 SP:	
STFZ-SP|SKL - sizes: 3-6 mm	**1 × SKL**
STFZ2-SP|SKL 23	**1 × SKL**

* Subject to alterations

Description	Order No.	PU
EMC ServiceBox	88002	1

RLFZ-M | SC|RLFZ-M

EMC Clamp Assembly with Strain Relief and a Large Clamping Range



for Screw Mounting

The RLFZ-M range is a further development of the EMC clamp assembly which enables grounding and strain relief of up to 12 cable shields from 3-12 mm using only one shield clamp size.

There are 10 different carriers available which can be easily user configured with up to 12 MSKL 3-12 shield clamps.

Advantages & Benefits

- Easy storage due to large clamping range 3-12 mm
- Designed for high density applications
- Possibility to configure custom specific EMC clamp assemblies
- Separate strain relief and EMC shield grounding
- Online design tool for EMC Clamp assembly on www.icotek.com

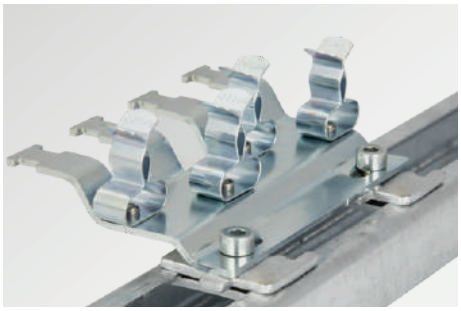
Specifications

Material

MSKL-clamp	Spring steel, zinc plated
RLFZ-M-foot	Carbon steel, galvanically zinc plated
SC-foot	Carbon steel, galvanically zinc plated

Configure online now

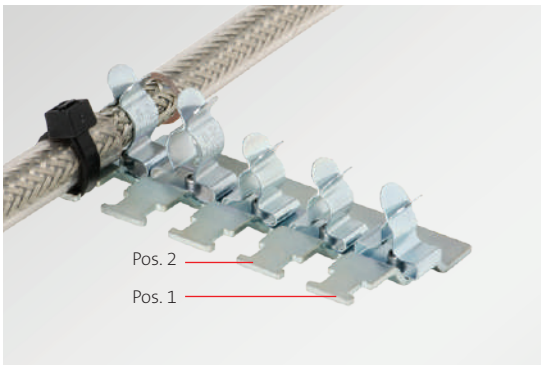
Type	Order No. for direct mounting	Order No. for C-rails	Number of shield clamps	Length	Width	PU
RLFZ-M (x2)	38069.002	–	2× MSKL 3-12	36 mm	54.1 mm	1
RLFZ-M (x3)	38070.002	38070.100	3× MSKL 3-12	52 mm 2.047 "	54.1 mm 2.13 "	1
RLFZ-M (x4)	38071.002	38071.100	4× MSKL 3-12	73 mm 2.874 "	54.1 mm 2.13 "	1
RLFZ-M (x5)	38072.002	38072.100	5× MSKL 3-12	94 mm 3.701 "	54.1 mm 2.13 "	1
RLFZ-M (x6)	38073.002	38073.100	6× MSKL 3-12	115 mm 4.528 "	54.1 mm 2.13 "	1
RLFZ-M (x7)	38074.002	38074.100	7× MSKL 3-12	136 mm 5.315 "	54.1 mm 2.13 "	1
RLFZ-M (x8)	38075.002	38075.100	8× MSKL 3-12	157 mm 6.181 "	54.1 mm 2.13 "	1
RLFZ-M (x9)	38076.002	38076.100	9× MSKL 3-12	178 mm 7.008 "	54.1 mm 2.13 "	1
RLFZ-M (x10)	38077.002	38077.100	10× MSKL 3-12	199 mm 7.835 "	54.1 mm 2.13 "	1
RLFZ-M (x11)	38078.002	38078.100	11× MSKL 3-12	220 mm 8.661 "	54.1 mm 2.13 "	1
RLFZ-M (x12)	38079.002	38079.100	12× MSKL 3-12	241 mm 9.488 "	54.1 mm 2.13 "	1



Type SC: Mounted on screw-foot for DIN-rail shape C

Try our EMC configurator: EMC cable shield clamps as single, double or multi solution – individually configurable for your applications on www.icotek.com

RLFZ | SC|RLFZ
EMC Clamp Assembly with Strain Relief



for Screw Mounting

The RLFZ range enables grounding and strain relief of up to 12 cables in a small space.

The combination of EMC shield grounding and strain relief is the key feature of this system.

There are 10 different carriers available which can be user configured with up to 12 SKL shield clamps.

The EMC shield clamps as listed below are available to mount:
SKL 1.5-3 | SKL 3-6 | SKL 6-8 | SKL 8-11

Advantages & Benefits

- Designed for high density applications
- Possibility to configure custom specific EMC clamp assemblies
- Separate strain relief and EMC shield grounding
- Online design tool for EMC Clamp assembly

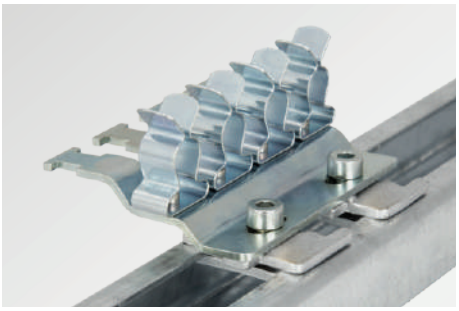
Specifications

Material

MSKL-clamp	Spring steel, zinc plated
RLFZ-M-foot	Carbon steel, galvanically zinc plated
SC-foot	Carbon steel, galvanically zinc plated

Configure online now

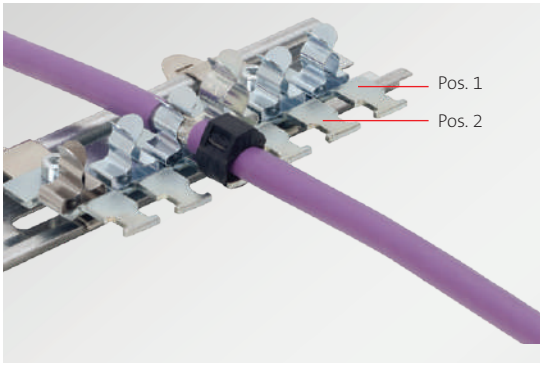
Type	Order No. for direct mounting	Order No. for C-rails	Number of shield clamps	Length	Width	PU
RLFZ (x3)	38005	38005.100	3× SKL	41.2 mm 1.622 "	44.4 mm 1.748 "	1
RLFZ (x4)	38010	38010.100	4× SKL	56.8 mm 2.236 "	44.4 mm 1.748 "	1
RLFZ (x5)	38015	38015.100	5× SKL	72.4 mm 2.85 "	44.4 mm 1.748 "	1
RLFZ (x6)	38020	38020.100	6× SKL	88 mm 3.465 "	44.4 mm 1.748 "	1
RLFZ (x7)	38025	38025.100	7× SKL	103.6 mm 4.079 "	44.4 mm 1.748 "	1
RLFZ (x8)	38030	38030.100	8× SKL	119.2 mm 4.693 "	44.4 mm 1.748 "	1
RLFZ (x9)	38035	38035.100	9× SKL	134.8 mm 5.307 "	44.4 mm 1.748 "	1
RLFZ (x10)	38040	38040.100	10× SKL	150.4 mm 5.921 "	44.4 mm 1.748 "	1
RLFZ (x11)	38045	38045.100	11× SKL	166 mm 6.535 "	44.4 mm 1.748 "	1
RLFZ (x12)	38050	38050.100	12× SKL	181.6 mm 7.15 "	44.4 mm 1.748 "	1



Type SC: Mounted on screw-foot for DIN-rail shape C

Try our EMC configurator: EMC cable shield clamps as single, double or multi solution – individually configurable for your applications on www.icotek.com

SF|RLFZ
EMC Clamp Assembly for TS35 rails



Configure online now

Type	Order No. (unfitted)	Number of shield clamps	Length	Width	PU
SF|RLFZ (x3)	38105	3× SKL	41.2 mm 1.622 "	70.7 mm 2.783 "	1
SF|RLFZ (x4)	38110	4× SKL	56.8 mm 2.236 "	70.7 mm 2.783 "	1
SF|RLFZ (x5)	38115	5× SKL	72.4 mm 2.85 "	70.7 mm 2.783 "	1
SF|RLFZ (x6)	38120	6× SKL	88 mm 3.465 "	70.7 mm 2.783 "	1
SF|RLFZ (x7)	38125	7× SKL	103.6 mm 4.079 "	70.7 mm 2.783 "	1
SF|RLFZ (x8)	38130	8× SKL	119.2 mm 4.693 "	70.7 mm 2.783 "	1
SF|RLFZ (x9)	38135	9× SKL	134.8 mm 5.307 "	70.7 mm 2.783 "	1
SF|RLFZ (x10)	38140	10× SKL	150.4 mm 5.096 "	70.7 mm 2.783 "	1
SF|RLFZ (x11)	38145	11× SKL	166 mm 6.535 "	70.7 mm 2.783 "	1
SF|RLFZ (x12)	38150	12× SKL	181.6 mm 7.15 "	70.7 mm 2.783 "	1

The SF|RLFZ range is based upon the RLFZ clamp assembly, which is mounted on snap feet for TS35 rails.

There are 10 different carriers available, which can be user configured with up to 12 SKL shield clamps.

The EMC shield clamps as listed below are available to mount:
SKL 1.5-3 | SKL 3-6 | SKL 6-8 | SKL 8-11

Advantages & Benefits

- Designed for high density applications
- Possibility to configure custom specific EMC clamp assembly
- Separate strain relief and EMC shield grounding
- Simple and tool-less mounting, easy assembly
- configure online on www.icotek.com

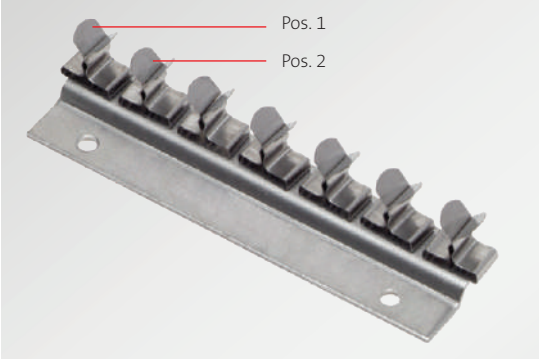
Specifications

Material

SKL-clamp	Spring steel, zinc plated
RLFZ-foot	Carbon steel, galvanically zinc plated

Try our EMC configurator: EMC cable shield clamps as single, double or multi solution – individually configurable for your applications on www.icotek.com

RLF
EMC Clamp Assembly



Configure online now

Type	Order No. (unfitted)	Number of shield clamps	Length	Width	PU
RLF (x3)	36965	3× SKL	46.2 mm 1.819 "	24 mm 0.945 "	1
RLF (x4)	36984	4× SKL	60.8 mm 2.394 "	24 mm 0.945 "	1
RLF (x5)	36958	5× SKL	72.4 mm 2.85 "	24 mm 0.945 "	1
RLF (x6)	36952	6× SKL	88 mm 3.465 "	24 mm 0.945 "	1
RLF (x7)	36963	7× SKL	103.6 mm 4.079 "	24 mm 0.945 "	1
RLF (x8)	36953	8× SKL	119.2 mm 4.693 "	24 mm 0.945 "	1
RLF (x9)	36985	9× SKL	140.8 mm 5.543 "	24 mm 0.945 "	1
RLF (x10)	36954	10× SKL	150.4 mm 5.096 "	24 mm 0.945 "	1
RLF (x11)	36955	11× SKL	166 mm 6.535 "	24 mm 0.945 "	1
RLF (x12)	36962	12× SKL	181.6 mm 7.15 "	24 mm 0.945 "	1

Comparable with the RLFZ clamp assembly, but without strain relief.

There are 10 different carriers available which can be user configured with up to 12 SKL shield clamps.

The EMC shield clamps as listed below are available to mount
SKL 1.5-3 | SKL 3-6 | SKL 6-8 | SKL 8-11

Advantages & Benefits

- Designed for high density applications
- Possibility to configure custom specific EMC clamp assembly
- Online design tool for EMC Clamp assembly

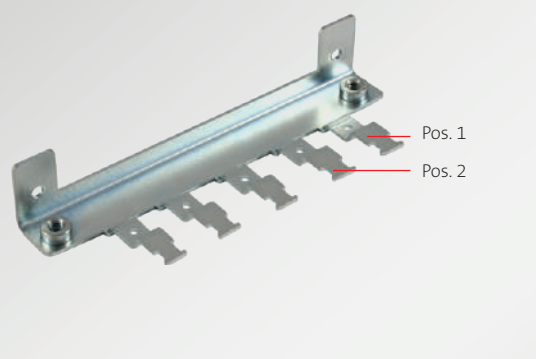
Specifications

Material

SKL-clamp	Spring steel, zinc plated
RLF-foot	Stainless steel

Try our EMC configurator: EMC cable shield clamps as single, double or multi solution – individually configurable for your applications on www.icotek.com

KEL-EMC-Z
Grounding Mount with Strain Relief



Type	Order No.	No. of SKL	Fastening	Fits with	PU
KEL-EMC-Z 16|4	**36525**	4 × SKL	long side	KEL-(ER-)E4 KEL 16|x KEL-FA 16|x KEL-U 16|x KEL-ER 16|x KEL-QUICK 16	1
KEL-EMC-Z 24|5	**36527**	5 × SKL	long side	KEL-(ER-)E5 KEL 24|x KEL-FA 24|x KEL-U 24|x KEL-ER 24|x KEL-QUICK 24	1
KEL-EMC-Z 183|4	36528	4 × SKL	long side	KEL 183	1

Cable entry, EMC shield grounding and strain relief – all in one location!

Cables pass through the KEL cable entry and lead directly to the EMC clamps and strain relief.

Simply insert the cable shield into the shield clamp and secure the cable jacket to the strain relief. Two separate functions (acc. to regulations) carried out quickly and easily!

Custom configurations are available for shield clamps up to 16 mm in diameter with minimal order quantities and lead time.

Advantages & Benefits

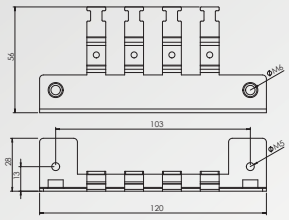
- Large surface contact between cable shield and housing, especially on conductive coated surfaces
- Sealing by outer cable jacket – EMC grounding by cable shield (in acc. with regulations)
- Combined routing and fastening with the KEL cable entry system
- Available without SKL shield clamps if only additional strain relief is required
- Mounting hole for ground strap or PE connection

Specifications

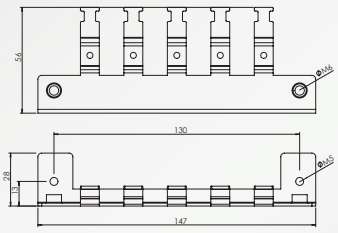
Material Carbon steel, zinc plated

Compatible with

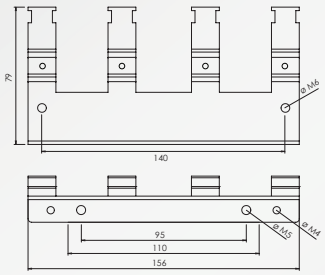
KEL-FA Cable entry frames	24 - 27
KEL-U Cable entry frames	20 - 22
KEL-ER Cable entry frames	16 - 19
KEL Cable entry frames	28 - 37
KEL-QUICK Cable entry frames	107 - 109
KEL 183 Cable entry frames	38 - 39



KEL-EMC-Z 16|4



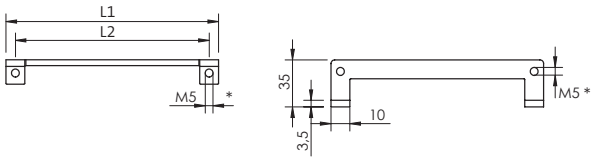
KEL-EMC-Z 24|5



KEL-EMC-Z 183|4

KEL-EMC-Z 183|4

KEL-EMC-PFM | KEL-EMC-PF
Grounding Mount, Bracket Version



The EMC bracket combined with the matching PFS|SKL EMC shield clamp is perfect in conjunction with the KEL cable entry frame for alleviating interferences due to shields.

The EMC bracket is assembled inside the control panel. For this process the same fixing screws for the assembly of the KEL frame on the control panel are used. A female screw thread M5 is already integrated in the KEL-EMC-PF bracket.

Depending on the cable diameter, the corresponding PFS|SKL EMC shield clamp can be snapped onto the EMC bracket.

Advantages & Benefits

- Supports a wide range of cable and wire sizes
- Large surface contact of the cable shield
- Permanent spring pressure on the cable shield
- Fast and easy assembly

Specifications

Material Carbon steel, galvanically zinc plated

Compatible with

KEL-FA Cable entry frames	24 - 27
KEL-U Cable entry frames	20 - 22
KEL-ER Cable entry frames	16 - 19
KEL Cable entry frames	28 - 37
KEL 183 Cable entry frames	38 - 39
KEL-QUICK Cable entry frames	107 - 109
KEL-BES Brush frames	366 - 367
KEL-DPU Cable entry plates	146 - 149
KEL-DPZ Cable entry plates	152 - 159
PFSZ|SKL / PFSZ-M|MSKL Shield clamps	252
PFS|SKL Shield clamps	253

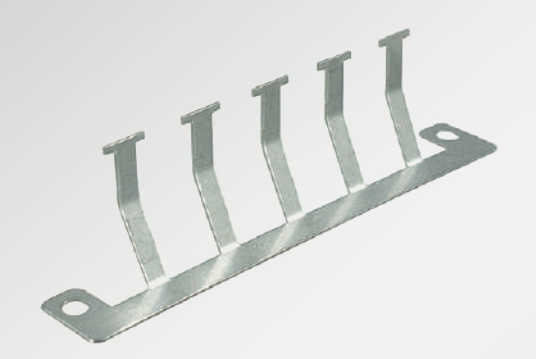
Type	Fits with	Order No.	Length L1	Length L2	PU
KEL-EMC-PFM 10	KEL(-U/-ER) 10|x KEL-FA 10|x KEL-QUICK 10|x	39184	93 mm 3.661 "	83 mm 3.268 "	1
KEL-EMC-PFM 16	KEL(-U/-ER) 16|x KEL-FA 16|x KEL-QUICK 16|x KEL-DPZ 16|x	39183	113 mm 4.449 "	103 mm 4.055 "	1
KEL-EMC-PFM 24	KEL(-U/-ER) 24|x KEL-FA 24|x KEL-QUICK 24|x KEL-DPZ 24|x KEL-DPR 24|x KEL-DPU 24|x	39181	140 mm 5.512 "	130 mm 5.119 "	1
KEL-EMC-PF B4	KEL-(ER-)E2 KEL-QUICK-E2 KEL-(U-)B KEL-QUICK-B KEL-ER-B	39150	68 mm 2.677 "	58 mm 2.283 "	1
KEL-EMC-PF 10	KEL-(ER-)E3 KEL-QUICK-E3 KEL(-U/-ER) 10|x KEL-FA 10|x KEL-QUICK 10|x	39160	93 mm 3.661 "	83 mm 3.268 "	1
KEL-EMC-PF 16	KEL-(ER-)E4 KEL-QUICK-E4 KEL(-U/-ER) 16|x KEL-FA 16|x KEL-QUICK 16|x KEL-DPZ 16|x	39170	113 mm 4.449 "	103 mm 4.055 "	1
KEL-EMC-PF 24	KEL-(ER-)E5 KEL-QUICK-E5 KEL(-U/-ER) 24|x KEL-FA 24|x KEL-QUICK 24|x KEL-DPZ 24|x KEL-DPZ-E KEL-DPR 24|x KEL-DPU 24|x	39180	140 mm 5.512 "	130 mm 5.119 "	1
KEL-EMC-PF 183	KEL 183 KEL 183-E	39190	200 mm 7.874 "	95 / 190 mm 3.74 / 7.48 "	1

KEL-EMC-PF

KEL-EMC-PFM

* M5 thread only applies to KEL-EMV-PF

KEL-EMC
Grounding Mount



Installation of pre-terminated cables without shield interruption. Direct, easy and quick contact to the enclosure

Advantages & Benefits

- Space saving, usable for up to 10 cables with the two row model
- Alternative to EMC cable glands, even for pre-terminated cables
- Low resistance shield contact

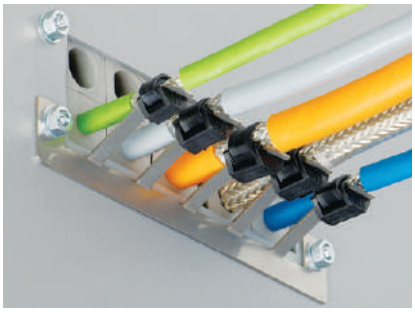
Specifications

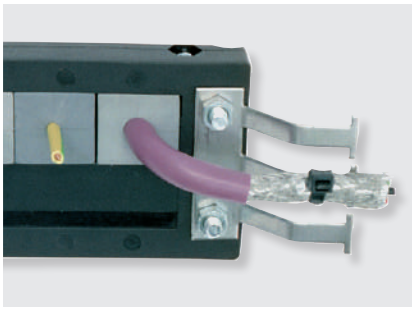
Material Stainless steel

Compatible with

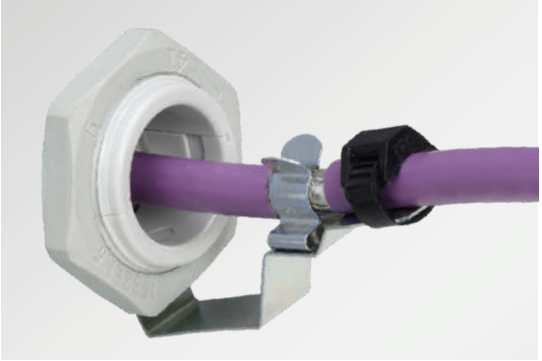
KEL-FA Cable entry frames	24 - 27
KEL-U Cable entry frames	20 - 22
KEL-ER Cable entry frames	16 - 19
KEL Cable entry frames	28 - 37
KEL-QUICK Cable entry frames	107 - 109
KEL-BES Brush frames	366 - 367

Type	Order No.	No. of teeth	Fastening	Fits with	PU
KEL-EMC-B	36520	2	long side	KEL-E2 KEL(-U)-B|× KEL-ER-B|× KEL-QUICK-B2 | B4	5
KEL-EMC 10	36522	3	long side	KEL-E3 KEL-FA 10|x KEL(-U) 10|x KEL-ER 10|x	5
KEL-EMC 16|4	36524	4	long side	KEL-E4 KEL-FA 16|x KEL(-U) 16|x KEL-ER 16|x KEL-QUICK 16	5
KEL-EMC 24|5	36526	5	long side	KEL-E5 KEL-FA 16|x KEL(-U) 24|x KEL-ER 24|x KEL-QUICK 24	5
KEL-EMC F	39110	3	long side	KEL(-U/-ER)-B|× KEL(-U/-ER) 10|x KEL-FA 10|x KEL(-U/-ER) 16|x KEL-FA 16|x KEL(-U/-ER) 24|x KEL-FA 24|x	5





KVT-EMC
EMC Bracket for Cable Glands



The KVT-EMC brackets in combination with the split cable glands KVT and QVT combine routing, EMC shield grounding and strain relief. The connection to the ground potential is possible via the enclosure wall or an grounding tape.

Cables pass through the split cable glands and lead directly into the EMC clamps.

Separate functions (according to regulations) carried out quickly and easily!

Advantages & Benefits

- Simple and tool free assembly
- Large contact area
- Subsequent assembly possible
- Additional M5 hole for ground strap

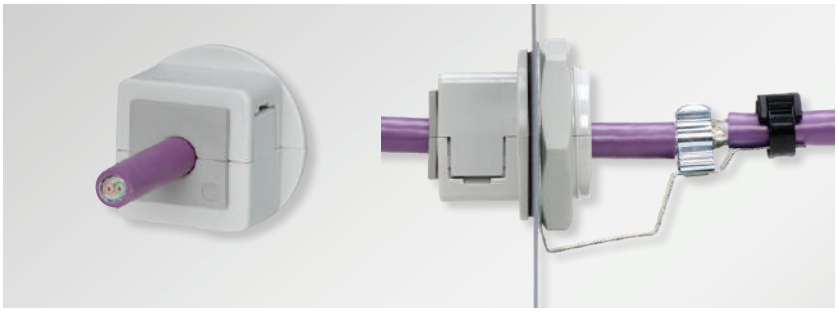
Specifications

Material Carbon steel, zinc plated

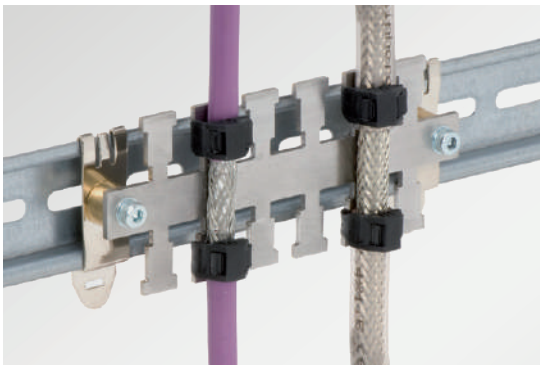
Compatible with

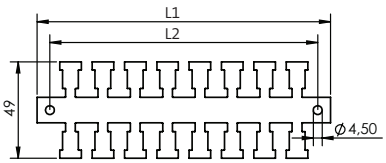
KVT Split cable glands 64 - 65
QVT Split cable glands 111 - 112

Type	Fits with	Order No.	Shield diameter	PU
KVT-EMC-16|SKL 1.5-3	QVT 16	37187.1	1.5 – 3 mm	5
KVT-EMC-16|SKL 3-6	QVT 16	37187.2	3 – 6 mm	5
KVT-EMC-16|SKL 6-8	QVT 16	37187.3	6 – 8 mm	5
KVT-EMC-16|SKL 8-11	QVT 16	37187.4	8 – 11 mm	5
KVT-EMC-20|SKL 1.5-3	KVT 20 QVT 20	37190.1	1.5 – 3 mm	5
KVT-EMC-20|SKL 3-6	KVT 20 QVT 20	37190.2	3 – 6 mm	5
KVT-EMC-20|SKL 6-8	KVT 20 QVT 20	37190.3	6 – 8 mm	5
KVT-EMC-20|SKL 8-11	KVT 20 QVT 20	37190.4	8 – 11 mm	5
KVT-EMC-25|SKL 1.5-3	KVT 25 QVT 25	37180.1	1.5 – 3 mm	5
KVT-EMC-25|SKL 3-6	KVT 25 QVT 25	37180.2	3 – 6 mm	5
KVT-EMC-25|SKL 6-8	KVT 25 QVT 25	37180.3	6 – 8 mm	5
KVT-EMC-25|SKL 8-11	KVT 25 QVT 25	37180.4	8 – 11 mm	5
KVT-EMC-32|SKL 1.5-3	KVT 32 QVT 32	37181.1	1.5 – 3 mm	5
KVT-EMC-32|SKL 3-6	KVT 32 QVT 32	37181.2	3 – 6 mm	5
KVT-EMC-32|SKL 6-8	KVT 32 QVT 32	37181.3	6 – 8 mm	5
KVT-EMC-32|SKL 8-11	KVT 32 QVT 32	37181.4	8 – 11 mm	5



KAFM-EMC
EMC Strain Relief Plates





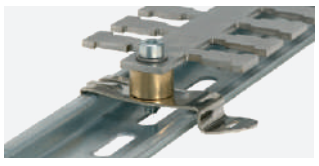
The EMC strain relief plate KAFM is practical for grounding interferences on the cable shield.

The cable assembly can be assembled on a mounting plate with screws, with SC foot on DIN-rails shape C or with SF or SK mounting foot on TS35 rails.

Specifications

Material Stainless steel

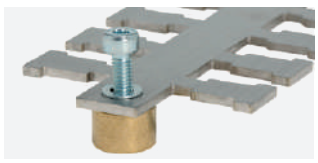
Type	Order No. Type SF	Order No. Type SK	Order No. Type SC	Order No. Type DH	Order No. loose rail	Length L1	Length L2	No. of teeth	PU
KAFM 2	36442	36432	36412	36482	36422	50.5 1.988 "	37.5 1.476 "	2	1
KAFM 4	36444	36434	36414	36484	36424	83.5 3,287 "	70.5 2.776 "	4	1
KAFM 6	36446	36436	36416	36486	36426	116.5 4.587 "	103.5 4.075 "	6	1
KAFM 8	36448	36438	36418	36488	36428	149.5 5.886 "	136.5 5.374 "	8	1
KAFM 10	36450	36440	36400	36490	36430	182.5 7,185 "	169.5 6.673 "	10	1
KAFM 16	36452	36470	36465	36460	36530	281.5 11.083 "	268.5 10.571 "	16	1
KAFM 29	36454	36471	36466	36462	36540	494.5 19.469 "	481.5 18.957	29	1
KAFM 59	36458	36472	36467	36464	36550	990 38,976 "	978 38.054 "	59	1
KAFM 59 zinc plated	36459	-	-	-	36562	990 38,976 "	978 38.054 "	59	1
SF	36230	Mounting foot single, for TS35 rails							10
SK	36232	Screw-foot single, for TS35 rails							10
SC	36231	Screw-foot single, for 30 mm DIN-rail shape C (width of mouth: 16–17 mm) with twist protection notch							10
Bushing DH	36234	Distance bushing 8 mm high							10



Type SF: Mounted on snap foot for DIN-rail shape H

Type SC: Mounted on screw-foot for DIN-rail shape C

Type SK: Mounted on screw-foot for DIN-rail shape H



Type DH: Mounted on bushing for flexible fixation on bottom sheet

ZL|SB-EMC
Shield Plates for ZL Strain Relief Plates

The shield plates ZL|SB-EMC provide shield grounding in addition to strain relief.

Affix the corresponding shield plates to ZL strain relief plates. The shield plate contacts the cable shield with the ground potential.

The result is a secure low resistance connection between cable shield and ground.

ZL strain relief plates offered separately.

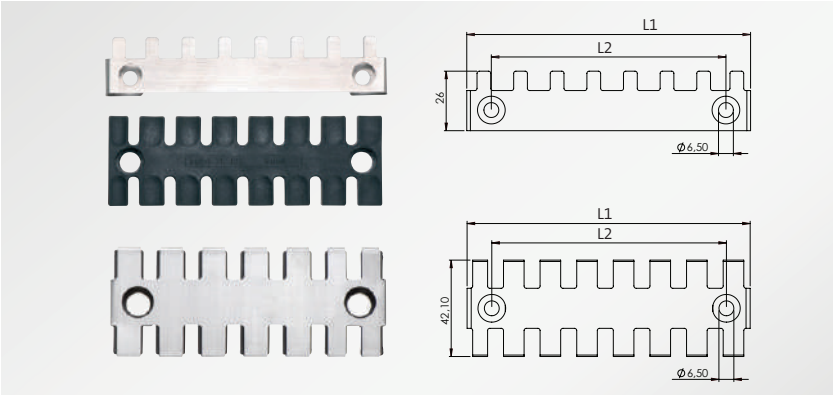
Specifications

Material Stainless steel

Compatible with

SF|ZL Strain relief plates	208
ZL Strain relief plates	204
ZL-AB Strain relief plates	205

Type	Model	Order No.	Fits with	Length L1	Length L2	PU
ZL 39|SB-EMC-1	single-row	36322	ZL 39	42 mm 1.654 "	19.5 mm 0.768 "	10
ZL 39|SB-EMC-2	double-row	37150	ZL 39	42 mm 1.654 "	19.5 mm 0.768 "	10
ZL 60|SB-EMC-1	single-row	36328	ZL 60	64 mm 2.52 "	43.5 mm 1.713 "	10
ZL 60|SB-EMC-2	double-row	37152	ZL 60	64 mm 2.52 "	43.5 mm 1.713 "	10
ZL 70|SB-EMC-1	single-row	36323	ZL 70	72.2 mm	43.5 mm	10
ZL 87|SB-EMC-1	single-row	36324	ZL 87	90 mm 3.543 "	68 mm 2.678 "	10
ZL 87|SB-EMC-2	double-row	37154	ZL 87	90 mm 3.543 "	68 mm 2.678 "	10
ZL 103|SB-EMC-1	single-row	36332	ZL 103	106 mm 4.173 "	84 mm 3.307 "	10
ZL 103|SB-EMC-2	double-row	37156	ZL 103	106 mm 4.173 "	84 mm 3.307 "	10
ZL 121|SB-EMC-1	single-row	36330	ZL 121	124 mm 4.882 "	102.5 mm 4.305 "	10
ZL 121|SB-EMC-2	double-row	37158	ZL 121	124 mm 4.882 "	102.5 mm 4.305 "	10
ZL 140|SB-EMC-1	single-row	36326	ZL 140	142 mm 5.591 "	121 mm 4.764 "	10
ZL 140|SB-EMC-2	double-row	37159	ZL 140	142 mm 5.591 "	121 mm 4.764 "	10



MB
Ground Straps

Manufactured with highly flexible E-Cu stranded wires with connecting end pads made of tinned copper strips.

The minimum transition and connecting resistance makes them perfectly suitable for use as ground straps.

Ground straps are available with M4, M5, M6, M8 or M10 connections and in some sizes with both connection sizes combined.

Type	Order No.	Distance L [mm]	Cross-section mm²	Hole size	PU
Cross-section 6 mm²					
MB 6 C-T | 100 | M4	32695	100	6	M4	1
MB 6 C-T |100 | M6	32700	100	6	M6	1
MB 6 C-T |150 | M4	39710	150	6	M4	1
MB 6 C-T |150 | M6	32701	150	6	M6	1
MB 6 C-T |200 | M4	32707	200	6	M4	1
MB 6 C-T |200 | M6	32702	200	6	M6	1
MB 6 C-T |250 | M6	32706	250	6	M6	1
MB 6 C-T |300 | M6	32703	300	6	M6	1
MB 6 C-T |400 | M6	32704	400	6	M6	1
MB 6 C-T |500 | M6	32705	500	6	M6	1
Cross-section 10 mm²					
MB 10 C-T | 100 | M6	32730	100	10	M6	1
MB 10 C-T | 100 | M6 + M4	39711	100	10	M6 + M4	1
MB 10 C-T | 100 | M8	32731	100	10	M8	1
MB 10 C-T | 150 | M5	32709	150	10	M5	1
MB 10 C-T | 150 | M5 + M6	32746	150	10	M5 + M6	1
MB 10 C-T | 150 | M8	32732	150	10	M8	1
MB 10 C-T | 200 | M5	32744	200	10	M5	1
MB 10 C-T | 200 | M6	32733	200	10	M6	1
MB 10 C-T | 200 | M6 + M8	32741	200	10	M6 + M8	1
MB 10 C-T | 200 | M8	32734	200	10	M8	1
MB 10 C-T | 250 | M6 + M8	32742	250	10	M6 + M8	1
MB 10 C-T | 300 | M6	32735	300	10	M6	1
MB 10 C-T | 300 | M6 + M8	32743	300	10	M6 + M8	1
MB 10 C-T | 300 | M8	32736	300	10	M8	1
MB 10 C-T | 400 | M4	32878	400	10	M4	1
MB 10 C-T | 400 | M6	32737	400	10	M6	1
MB 10 C-T | 400 | M8	32738	400	10	M8	1
MB 10 C-T | 500 | M6	32739	500	10	M6	1

MB
Ground Straps

Connecting end pads (copper)

Advantages & Benefits

- Available in a variety of lengths and cross-sections
- Low impedances
- UL 467 listed

Specifications

Material: Cu-ETP with connecting end pads
Pads made of tinned copper strips

Current Load

Cross-section	Current load
6 mm²	67 – 80 A
10 mm²	89 – 106 A
16 mm²	132 – 157 A
25 mm²	177 – 210 A
35 mm²	230 – 275 A
50 mm²	280 – 350 A
70 mm²	338 – 403 A

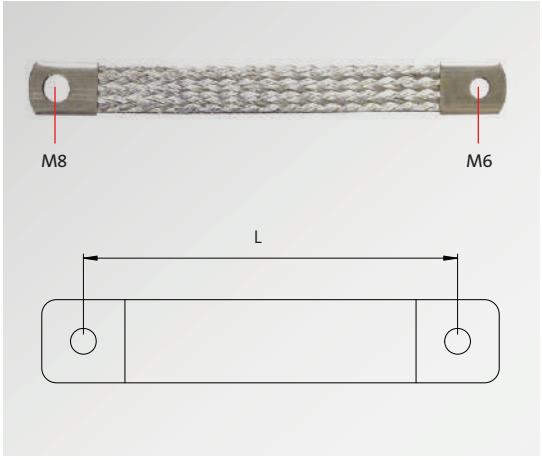
Type	Order No.	Distance L [mm]	Cross-section mm²	Hole size	PU
Cross-section 16 mm²					
MB 16 C-T | 100 | M6	32760	100	16	M6	1
MB 16 C-T | 100 | M6 + M8	32758	100	16	M6 + M8	1
MB 16 C-T | 100 | M8	32761	100	16	M8	1
MB 16 C-T | 100 | M10	32759	100	16	M10	1
MB 16 C-T | 150 | M6	32762	150	16	M6	1
MB 16 C-T | 150 | M8	32763	150	16	M8	1
MB 16 C-T | 200 | M6	32764	200	16	M6	1
MB 16 C-T | 200 | M5 + M6	32776	200	16	M5 + M6	1
MB 16 C-T | 200 | M6 + M8	32773	200	16	M6 + M8	1
MB 16 C-T | 200 | M8	32765	200	16	M8	1
MB 16 C-T | 250 | M8	32766	250	16	M8	1
MB 16 C-T | 250 | M6 + M8	32774	250	16	M6 + M8	1
MB 16 C-T | 300 | M6	32767	300	16	M6	1
MB 16 C-T | 300 | M6 + M8	32775	300	16	M6 + M8	1
MB 16 C-T | 300 | M8	32768	300	16	M8	1
MB 16 C-T | 350 | M8	32769	350	16	M8	1
MB 16 C-T | 350 | M5 + M6	32777	350	16	M5 + M6	1
MB 16 C-T | 400 | M6	32873	400	16	M6	1
MB 16 C-T | 400 | M8	32770	400	16	M8	1
MB 16 C-T | 500 | M8	32771	500	16	M8	1
MB 16 C-T | 600 | M8	32772	600	16	M8	1
MB 16 C-T | 1000 | M8	32778	1000	16	M8	1
Cross-section 25 mm²					
MB 25 C-T | 100 | M10	32800	100	25	M10	1
MB 25 C-T | 150 | M10	32801	150	25	M10	1
MB 25 C-T | 200 | M8	32802	200	25	M8	1
MB 25 C-T | 200 | M10	32803	200	25	M10	1
MB 25 C-T | 250 | M8	32804	250	25	M8	1
MB 25 C-T | 250 | M10	32805	250	25	M10	1

MB
Ground Straps

Manufactured with highly flexible E-Cu stranded wires with connecting end pads made of tinned copper strips.

The minimum transition and connecting resistance makes them perfectly suitable for use as ground straps.

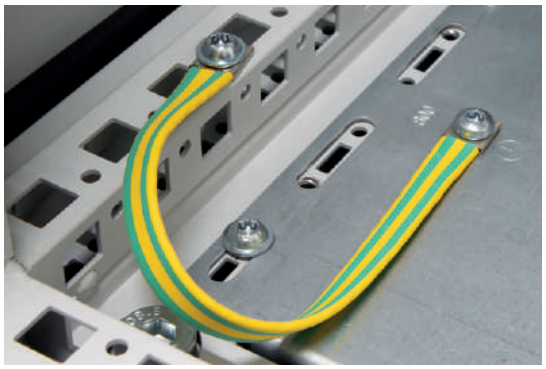
Ground straps are available with M4, M5, M6, M8 or M10 connections and in some sizes with both connection sizes combined.



Type	Order No.	Distance L [mm]	Cross-section mm²	Hole size	PU
Cross-section 25 mm²					
MB 25 C-T | 300 | M8	32806	300	25	M8	1
MB 25 C-T | 300 | M10	32807	300	25	M10	1
MB 25 C-T | 300 | M6	32816	300	25	M6	1
MB 25 C-T | 300 | M8 + M10	32817	300	25	M8 + M10	1
MB 25 C-T | 350 | M10	32808	350	25	M10	1
MB 25 C-T | 400 | M8	32809	400	25	M8	1
MB 25 C-T | 500 | M8	32810	500	25	M8	1
MB 25 C-T | 500 | M10	32812	500	25	M10	1
MB 25 C-T | 600 | M8	32811	600	25	M8	1
MB 25 C-T | 800 | M8	32815	800	25	M8	1
Cross-section 35 mm²					
MB 35 C-T | 200 | M10	32823	200	35	M10	1
MB 35 C-T | 250 | M10	32824	250	35	M10	1
MB 35 C-T | 300 | M10	32825	300	35	M10	1
MB 35 C-T | 400 | M8	32886	400	35	M8	1
Cross-section 50 mm²					
MB 50 C-T | 150 | M10	32847	150	50	M10	1
MB 50 C-T | 200 | M10	32848	200	50	M10	1
MB 50 C-T | 250 | M10	32849	250	50	M10	1
MB 50 C-T | 300 | M10	32850	300	50	M10	1
Cross-section 70 mm²					
MB 70 C-T | 200 | M10*	32868	200	70	M10	1
MB 70 C-T | 300 | M10*	32870	300	70	M10	1
MB 70 C-T | 500 | M10*	32872	500	70	M10	1

* No UL certification

MB
Ground Straps green/yellow



The flat straps for optimum grounding connections are also available with green and yellow shrink sleeve. This provides clear visual identification.

The ground straps are made of highly flexible stranded wires with pressed-on contact pads and a colored shrink sleeve for identification.

The minimum transition and connecting resistance makes them perfectly suitable for use as grounding straps.

User benefits

- Available in a variety of lengths and cross-sections
- Low impedances

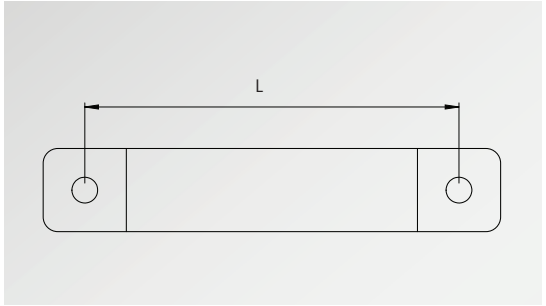
Features

Current Load

- Cross-section 6 mm2 67 – 80 A
- Cross-section 16 mm² 132 – 157 A
- Cross-section 25 mm² 177 – 210 A

Specifications

Material ground strap	Copper, tin-plated
Material contact pads	Copper, tin-plated
Material shrink sleeve	Polyolefin
Temperature	-20°C to +80°C (static)



Type	Distance L [mm]	Cross-section [mm²]	Hole size	Order No.	PU
MB 6 C-T | 200 | M4 GG	200	6	M4	32707.800	10
MB 6 C-T | 200 | M6 GG	200	6	M6	32702.800	10
MB 16 C-T | 200 | M6 GG	200	16	M6	32764.800	10
MB 16 C-T | 200 | M8 GG	200	16	M8	32765.800	10
MB 16 C-T | 250 | M8 GG	250	16	M8	32766.800	10
MB 16 C-T | 300 | M6 GG	300	16	M6	32767.800	10
MB 16 C-T | 300 | M8 GG	300	16	M8	32768.800	10
MB 25 C-T | 300 | M8 GG	300	25	M8	32806.800	10

EMC
Customized Solutions

In addition to our standard product offering we offer customized solutions for your application – even for small quantities!

A wide range of standard clamp assemblies are already available (see pages 270 – 273).

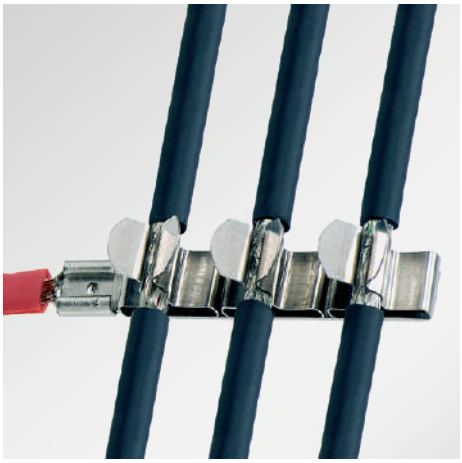
If a standard EMC clamp assembly is not practicable in your case, a custom designed carrier for shield clamps can be supplied.

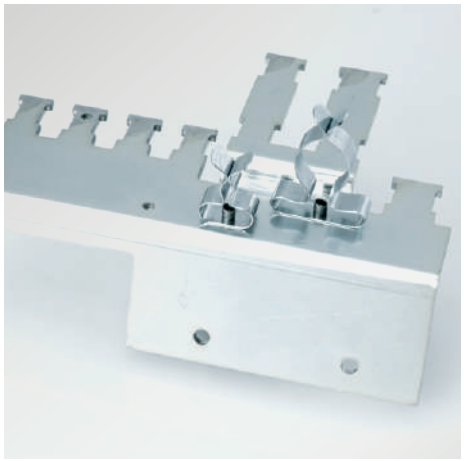
We look forward to sharing our ideas and custom EMC solutions with you.

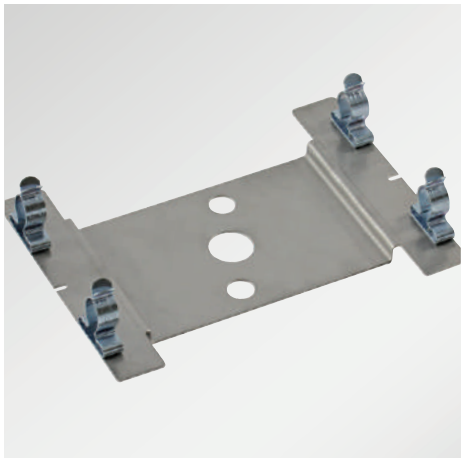
Advantages & Benefits

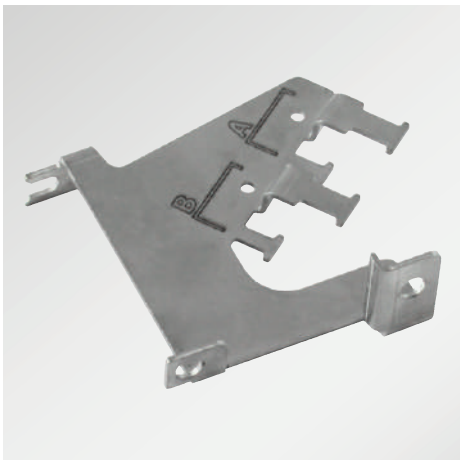
- Supply of custom designed carriers for SKL shield clamps
- Cost-effective even for small quantities
- Available for a wide range of cable diameters

Contact us: pm@icotek.com









4
4.1
4.2
4.3
4.4

4.2 – 4.4 EMC Cable Entry Systems
Solutions for Conducted and Field-Bound Disturbances

The industrial process technology demands increasing security against disturbances for electrical MCR facilities (measure, control, regulate). Special emphasis is being placed on the derivation of electromagnetic interference. A distinction is made between screening-related and field-related disturbances.

Screening-related interference is being transmitted directly from the source of interference to the cable shield of the supply or signal leads and then to the susceptible device. All capacitive and inductive influences of electrical or magnetic fields are called field bound disturbances. The field bound disturbances are being transferred, for example as a cable's electromagnetic field, from the source of interference to the susceptible device and received there, for instance, by a head acting as an antenna.

A large contact area of the cable shield for the derivation of the interference to a conductive housing wall combined with the shielding of the housing interior generally offers a good solution for both types of interference.

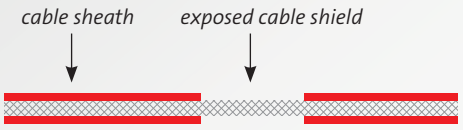
In case of conducted as well as field bound EMC disturbances, our cable entry system offers an effective way to divert and block those disturbances.

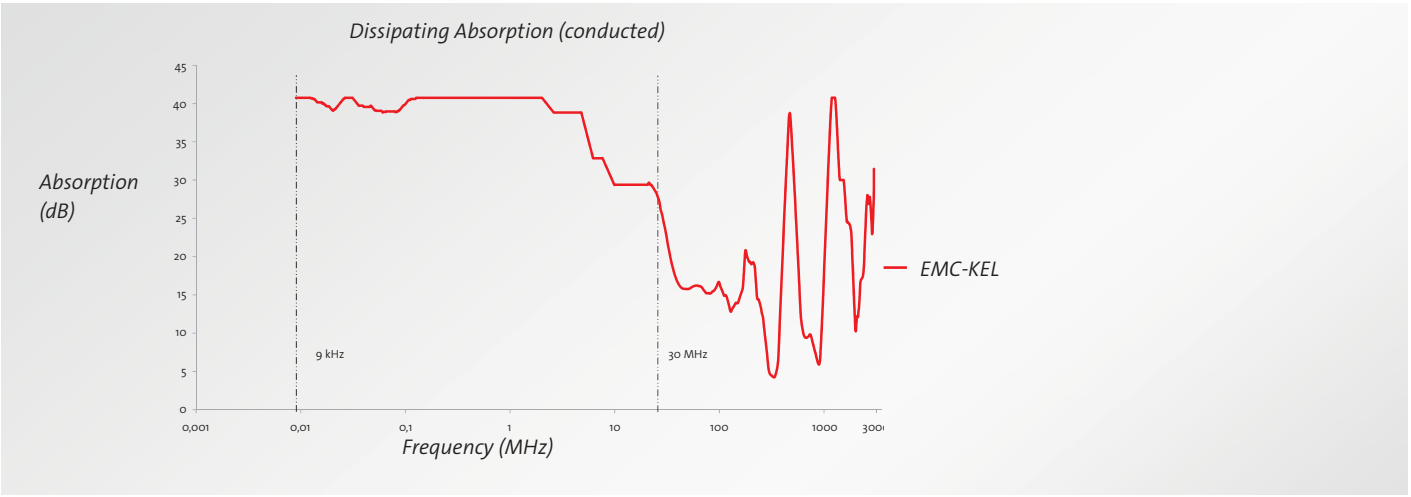
The key feature of icotek's system is the split frame and split grommets which provide quick, convenient and cost effective routing of pre-terminated and multi-conductor cables, hoses and conduits. The split frame and split grommets alleviate the need to cut and re-wire pre-terminated cables. Therefore, cable warranties are unaffected.

Test Results: Conducted and Field-Bound Disturbances

Conducted disturbances

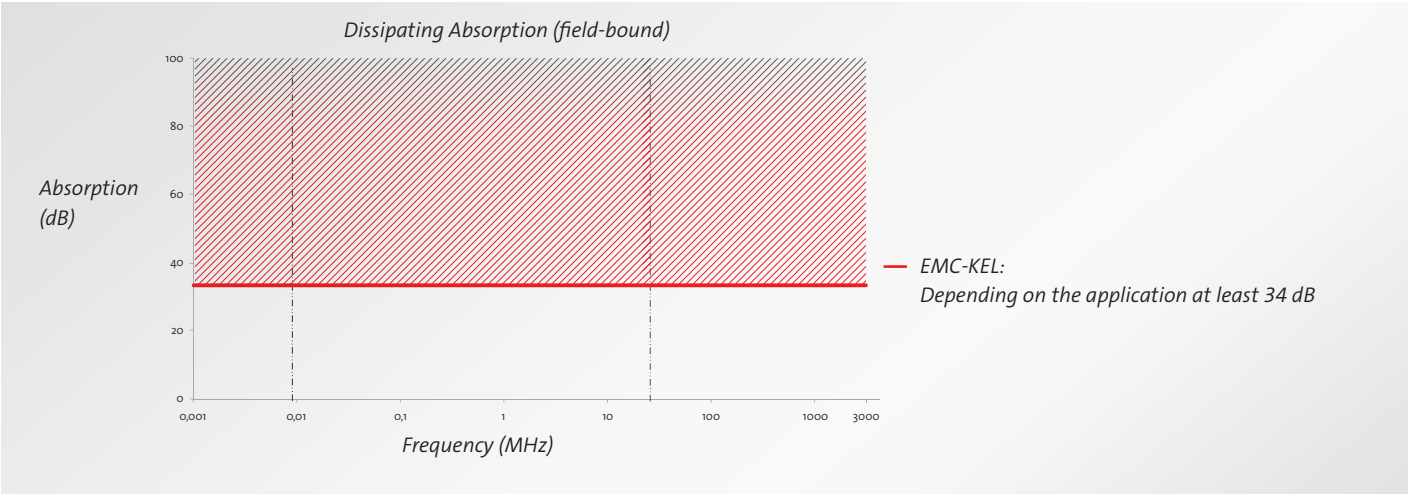
The EMC-KEL shows during cable-bound disruptions stable attenuation values up to 40 dB in the frequency ranges from 9 kHz to 30 MHz.

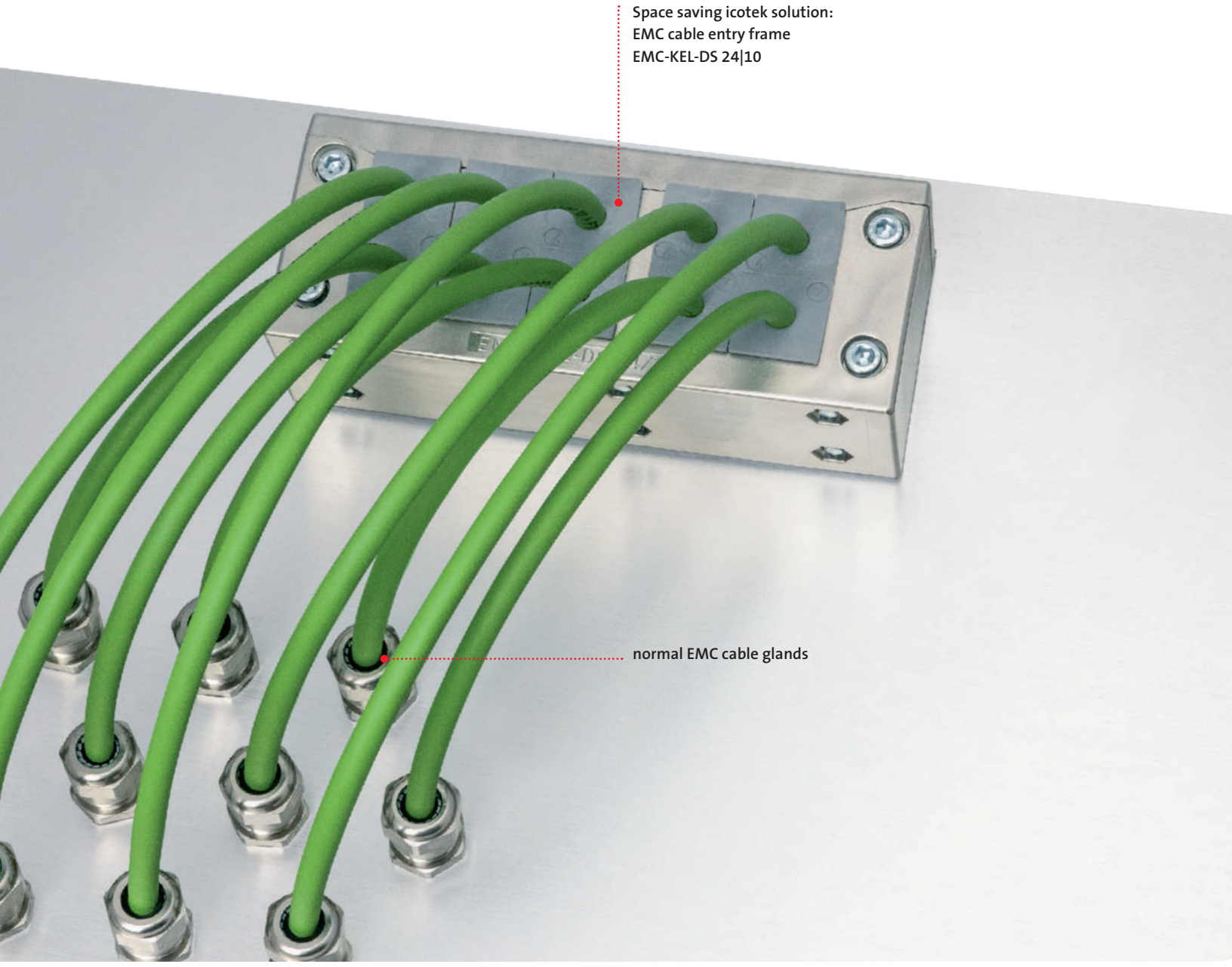




Field-bound disturbances

Regarding the field-bound disturbances and depending on the application, in the relevant frequency ranges up to 3 GHz constant measurements of at least 34 dB have been achieved. Below the attenuation range, the curve falls only at extreme high frequencies above 3 GHz.




Space saving icotek solution:
EMC cable entry frame
EMC-KEL-DS 24|10
normal EMC cable glands

EMC Split Cable Entry Frames

EMC Split Cable Entry Frames
for Cable Diameters 2 to 33 mm

EMC-KEL-DS

290 – 291

EMC Split Cable Entry Frames
for Cable Diameters 2 to 33 mm

EMC-KEL

292 – 293

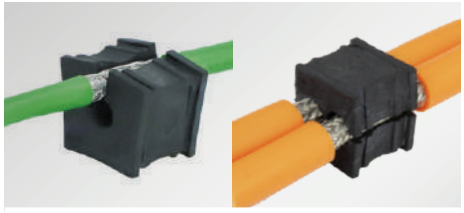
EMC Split Cable Gland

EMC Split Cable Gland
for Screw-In Assembly, M32, M63
for Cable Diameters 2 to 33 mm

EMC-KVT-DS

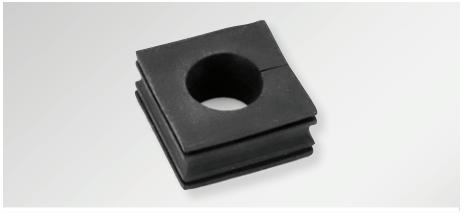
294 – 295

Split EMC Grommets



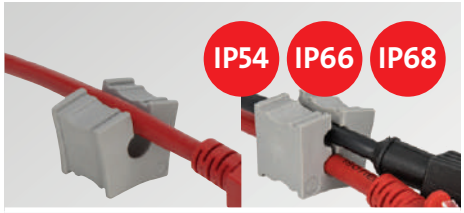
Split EMC Grommets
Small, Single and Multi
for Cables with and without Connectors
for Cable Diameters 2 to 16 mm

EMC-KT **296**



Split EMC Grommets
Large, Single
for Cables with and without Connectors
for Cable Diameters 13 to 33 mm

EMC-KT **297**



KT Cable Grommets
Split,
for Cables with and without Connectors
for Cable Diameters 1 – 35 mm

78, 79

EMC-KEL-DS
EMC Cable Entry Frames

IP55

The EMC cable entry frame EMC-KEL-DS has been metallized (galvanize coated) to create a conductive surface.
The front cable grommet (A) is used for strain relief and cable sealing on the cable jacket. The cable shield is contacted over 360° via the rear conductive grommet (B).

The contact between the EMV-KEL-DS and the conductive housing wall is realized via the included conductive flat gasket.

Advantages & Benefits

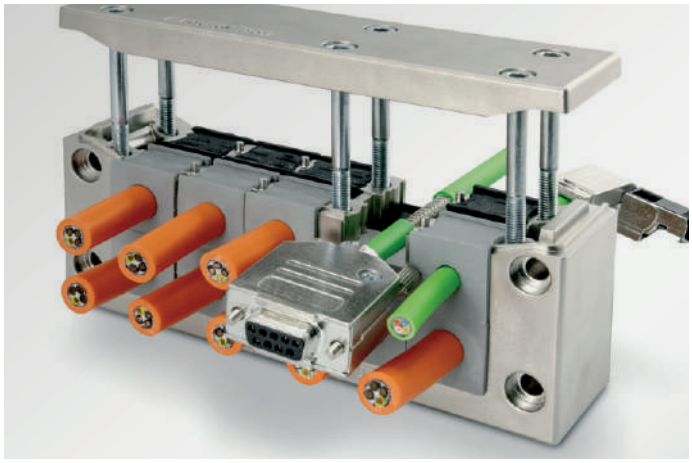
- Perfect for already pre-terminated cables. The connector does not have to be removed for wiring
- Strain relief and sealing are separated from the EMC contact
- Both conducted and field-bound disturbances are reliably diverted
- Very attractive and scratch-resistant surface
- Contacting the cable shield over 360°
- EMC grommets made entirely from conductive elastomer
- Very good dissipation values
- Very good shielding effect with regard to EMC tightness
- Integrated strain relief
- Protection class IP55
- High cable density with multi grommets

Specifications

Material	Polyamide, highly conductive coating
Flame class	acc. to UL 94 HB
Operating temperature	-40°C to +140°C -40°F to +284°F
Properties	Halogen free, silicone free
Frame depth	40 mm / 1.575"
IP rating	IP55

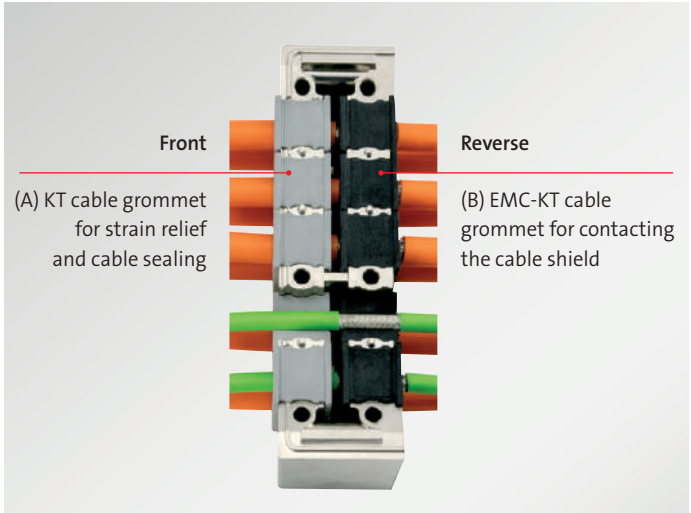
Accessories

EMC-KT grommets	296 - 297
KT grommets	78 - 79

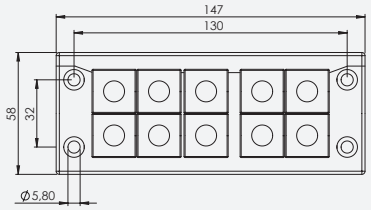
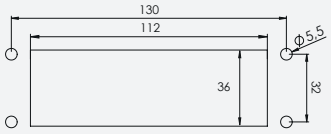
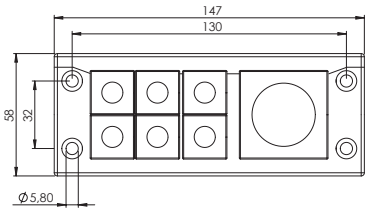
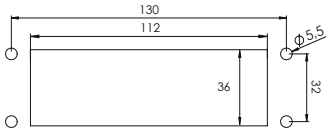
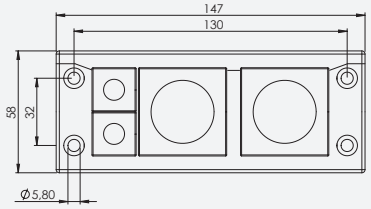
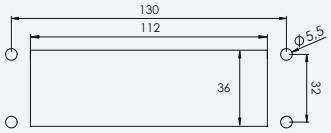
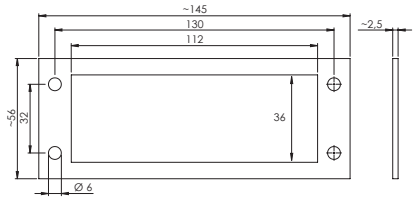


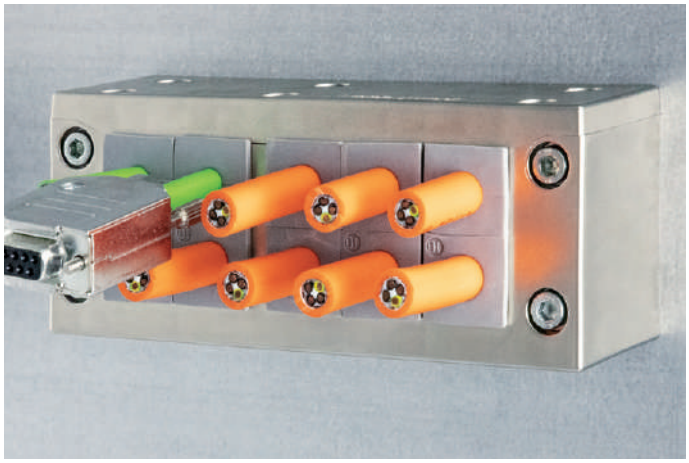
Front

Reverse



EMC-KEL-DS
EMC Cable Entry Frames

Description	Cut-out | Drilling template	Type	Order No.	Cut-out mm	KT Grommets small | large	EMC grommets small| large	PU
		EMC-KEL-DS 24|10	99410	112 × 36 mm	10 | –	10 | –	1
		EMC-KEL-DS 24|10 with threaded bushings M4	99410.400				
		EMC-KEL-DS 24|7	99411	112 × 36 mm	6 | 1	6 | 1	1
		EMC-KEL-DS 24|7 with threaded bushings M4	99411.400				
		EMC-KEL-DS 24|4	99412	112 × 36 mm	2 | 2	2 | 2	1
		EMC-KEL-DS 24|4 with threaded bushings M4	99412.400				
		EMC gasket size 24 conductive gasket for EMC-KEL-DS	98047	112 × 36 mm	–	–	1



EMC-KEL
EMC Cable Entry Frames

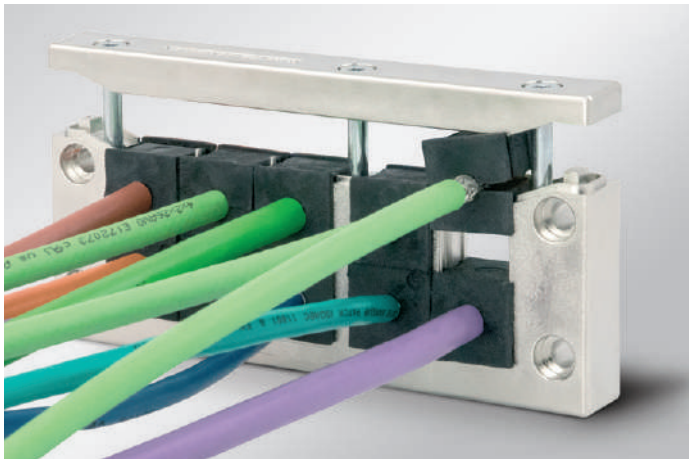
The EMC cable entry frames EMC-KEL are based on the KEL-U and KEL-E. Due to a conductive surface, disturbances in the cable shields on the control cabinet can be easily dissipated. Field bound disturbances are derived by the metallisation.

The cable entry system is easy to install. Cable grommets are placed into compartments and are securely fixed to the frame during assembly.

The EMC-KEL-U frames match exactly the cut-out dimensions for 16- and 24-pin standard industrial connectors. Either a cut-out of 36 mm or 46 mm in height can be chosen depending on the cables being routed.

The single-row versions EMC-KEL-E are particularly suited for flat connectors. The small frames are ideal for applications with limited space.

Between the EMC-KEL and the metal wall a conductive flat gasket (included) is mounted. The flange surface on the metal wall must be free of paint.



Advantages & Benefits

- Both conducted and field-bound disturbances can be reliably diverted
- Very attractive and scratch-resistant surface
- Contacting the cable shield over 360°
- Grommets made entirely from conductive elastomer
- High cable density
- Very good dissipation values
- Very good shielding effect with regard to EMC tightness

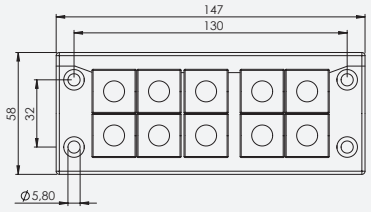
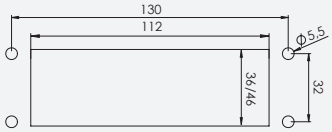
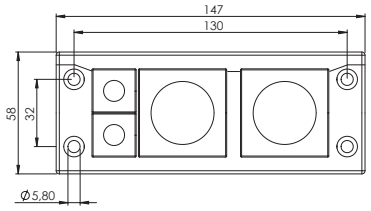
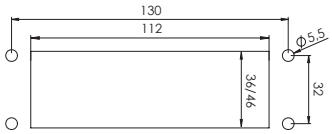
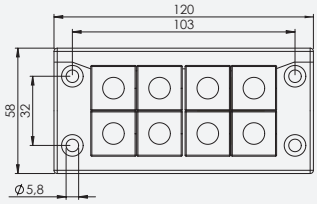
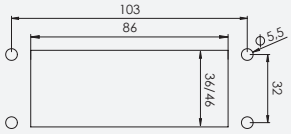
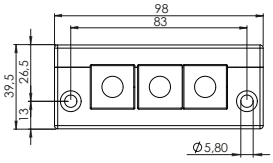
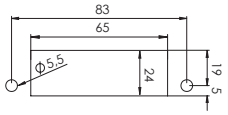
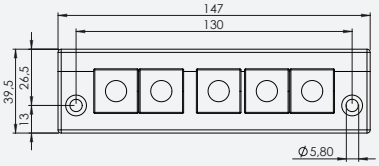
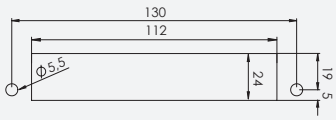
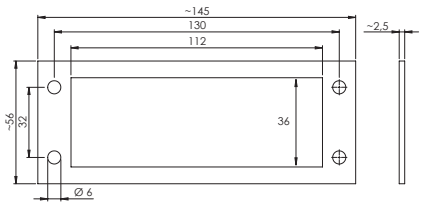
Specifications

Material	Polyamide, highly conductive coating
Flame class	UL 94 HB
Operating	-40°C to +140°C
temperature	-40°F to +284°F
Properties	Halogen free, silicone free
Frame depth	17 mm / 0.669 "

Accessories

EMC-KT grommets	296 - 297

EMC-KEL
EMC Cable Entry Frames

Description	Cut-out	Type	Order No.	Cut-out	Grommets EMC-KT small | large	PU
		EMC-KEL-U 24|10	99400	36 × 112 mm 1.417 x 4.409 "	10|-	1
		EMC-KEL-U 24|4	99401	36 × 112 mm 1.417 x 4.409 "	2|2	1
		EMC-KEL-U 16|8	99402	36 × 86 mm 1.417 x 3.386 "	8|-	1
		EMC-KEL-E3	99420	24 × 65 mm 0.945 x 2.56 "	3|-	1
		EMC-KEL-E5	99422	24 × 112 mm 0.945 x 4.409 "	5|-	1
		EMC gasket size 24 conductive gasket	98047	36 × 112 mm 1.417 x 4.409 "	–	1

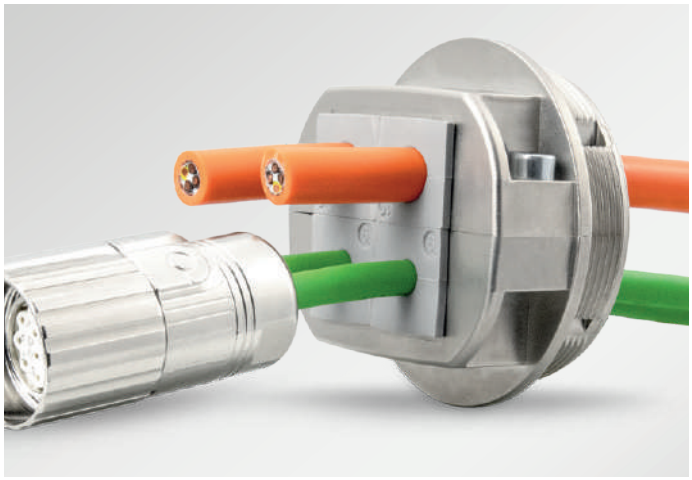
EMC-KVT-DS
EMC Split Cable Gland

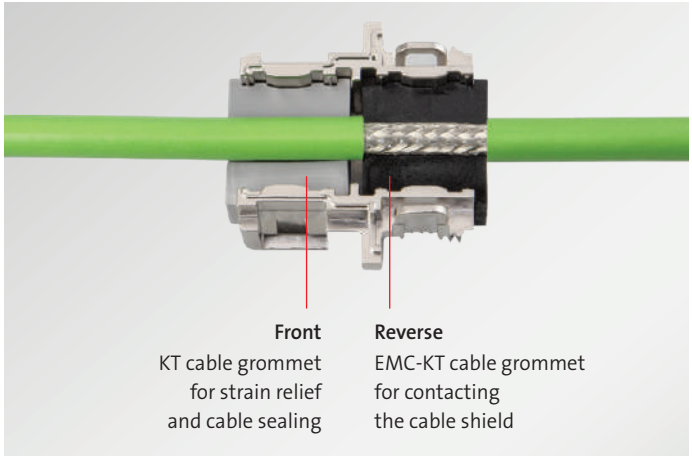
IP55

The split cable gland EMC-KVT-DS is based on the standard icotek KVT product. However, the EMC-KVT-DS has been metallized (galvanize coated) to create a conductive surface.

The first cable grommet (KT small) is used for strain relief and cable sealing on the cable jacket. The second grommet (EMC-KT small) contacts the cable shield at a full 360 degrees.

The conductive flat gasket included in the scope of delivery makes contact between the cable gland and the conductive housing wall. The EMC-KVT-DS can thus be fixed using a plastic lock nut. Alternatively, an additional contact to the metal wall can be made using a special EMC lock nut.





Advantages & Benefits

- Perfect for already pre-terminated cables. The connector does not have to be removed for wiring
- Strain relief and sealing are separated from the EMC contact
- Both conducted and field-bound disturbances are reliably diverted
- Very attractive and scratch-resistant surface
- Contacting the cable shield over 360°
- EMC grommets made entirely from conductive elastomer
- Very good dissipation values
- Very good shielding effect with regard to EMC tightness
- Integrated strain relief
- Protection class IP55
- High cable density

Specifications

Material	Polyamide, highly conductive coating
EMC locknut	Nickel-plated brass
Flame class	acc. to UL 94 HB
Temperature	-30°C to +90°C
Properties	Halogen free, silicone free
IP rating	IP55

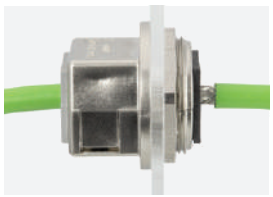
Accessories

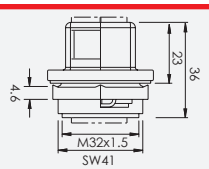
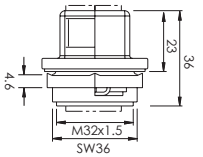
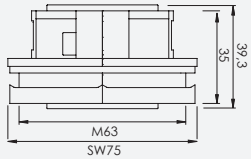
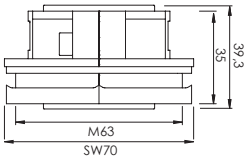
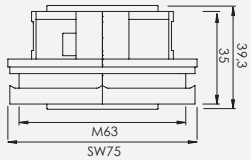
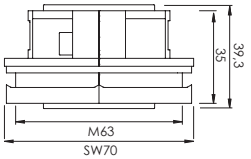
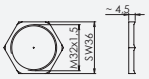
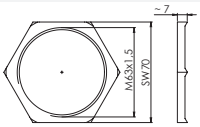
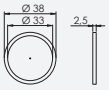
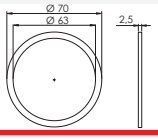
KT grommets	78 - 79
EMC-KT grommets	296 - 297
KGM	358

EMC locknut

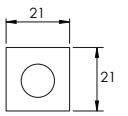
EMC-KVT-DS
EMC Split Cable Gland

Made in Germany | RoHS compliant | EMV EMC CEM | RINA | IP55



Description	Type	Order No.	KT Grommets small | large	EMC grommets small| large	Thread Thread length	PU
	EMC-KVT-DS 32 with plastic lock nut KGM 32	99431	1 | –	1 | –	M32 x 1.5 Length 14 mm/ 0.55"	5
	EMC-KVT-DS 32 with EMC lock nut EMC-GM 32 Nickel-plated brass	99432	1 | –	1 | –	M32 x 1.5 Length 14 mm/ 0.55"	5
	EMC-KVT-DS 63|1 with plastic lock nut KGM 63	99434	– | 1	– | 1	M63 × 1.5 Length 14 mm/ 0.55"	1
	EMC-KVT-DS 63|1 with EMC lock nut EMC-GM 63 Nickel-plated brass	99435	– | 1	– | 1	M63 × 1.5 Length 14 mm/ 0.55"	1
	EMC-KVT-DS 63|4 with plastic lock nut KGM 63	99436	4 | –	4 | –	M63 × 1.5 Length 14 mm/ 0.55"	1
	EMC-KVT-DS 63|4 with EMC lock nut EMC-GM 63 Nickel-plated brass	99437	4 | –	4 | –	M63 × 1.5 Length 14 mm/ 0.55"	1
	EMC-GM 32 EMC lock nut M32 for EMC-KVT-DS 32 Nickel-plated brass	99557	–	–	–	5
	EMC-GM 63 EMC lock nut M63 for EMC-KVT-DS 63 Nickel-plated brass	99558	–	–	–	1
	EMC gasket 32 conductive gasket for EMC-KVT-DS 32	99555	–	–	–	1
	EMC gasket 63 conductive gasket for EMC-KVT-DS 63	99556	–	–	–	1

EMC-KT
Split EMC Grommets, Small, Single, Multi



EMC-KT small

The cable grommets type EMC-KT are made of a very conductive elastomer. Thus, disturbances are dissipated from the cable shield directly via the grommet, the frame and the flat gasket. This ensures full-area protection against field-bound interference!

The model range EMC-KT small is designed for cable diameters from 2 to 16 mm. Cable grommets EMC-KT large accept a wide range of cable diameters from 13 to 33 mm.

When installing the small grommets in multiple rows, the flat sides should be facing each other.

Advantages & Benefits

- Contacting the cable shield over 360°
- EMC grommets made entirely from conductive elastomer
- Enable routing of pre-terminated cables through cable entry frames and split cable glands
- Available for a large range of cable diameters

Specifications

Material	Elastomer, conductive
Flame class	in accordance with UL94-HB
Color	black
Operating temperature	-30°C to +80°C -22°F to +176°F
Properties	Halogen free, silicone free

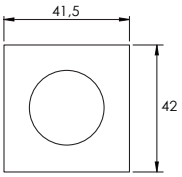
Accessories

ST Plugs	87

KT grommets can be found from page 78 on.

Description	Type	Order No.	Clamping range on the cable shield	PU
	EMC-KT 2	99459	2 – 3 mm 0.079 – 0.118"	5
	EMC-KT 3	99460	3 – 4 mm 0.118 – 0.157"	5
	EMC-KT 4	99461	4 – 5 mm 0.157 – 0.197"	5
	EMC-KT 5	99462	5 – 6 mm 0.197– 0.236"	5
	EMC-KT 6	99463	6 – 7 mm 0.236 – 0.276"	5
	EMC-KT 7	99464	7 – 8 mm 0.276 – 0.315"	5
	EMC-KT 8	99465	8 – 9 mm 0.315 – 0.354"	5
	EMC-KT 9	99466	9 – 10 mm 0.354 – 0.394"	5
	EMC-KT 10	99467	10 – 11 mm 0.394 – 0.433"	5
	EMC-KT 11	99468	11 – 12 mm 0.433 – 0.472"	5
	EMC-KT 12	99469	12 – 13 mm 0.472 – 0.512"	5
	EMC-KT 13	99470	13 – 14 mm 0.512 – 0.551"	5
	EMC-KT 14	99471	14 – 15 mm 0.551 – 0.591"	5
	EMC-KT 15	99472	15 – 16 mm 0.591 – 0.63"	5
	EMC-BTK	99473	blank grommet	5
	EMC-KT 2|2	99500	2× ø 2 mm	5
	EMC-KT 2|3	99501	2× ø 3 mm	5
	EMC-KT 2|4	99493	2× ø 4 mm	5
	EMC-KT 2|5	99502	2× ø 5 mm	5
	EMC-KT 2|6	99503	2× ø 6 mm	5
	EMC-KT 4|2	99504	4× ø 2 mm	5
	EMC-KT 4|3	99505	4× ø 3 mm	5
	EMC-KT 4|4	99506	4× ø 4 mm	5
	EMC-KT 4|5	99507	4× ø 5 mm	5

EMC-KT
Split EMC Grommets, Large, Single



EMC-KT large

The cable grommets type EMC-KT are made of a very conductive elastomer. Thus, disturbances are dissipated from the cable shield directly via the grommet, the frame and the flat gasket. This ensures full-area protection against field-bound interference!

The model range EMC-KT small is designed for cable diameters from 2 to 16 mm. Cable grommets EMC-KT large accept a wide range of cable diameters from 13 to 33 mm.

When installing the small grommets in multiple rows, the flat sides should be facing each other.

Advantages & Benefits

- Contacting the cable shield over 360°
- EMC grommets made entirely from conductive elastomer
- Enable routing of pre-terminated cables through cable entry frames and split cable glands
- Available for a large range of cable diameters

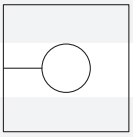
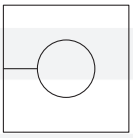
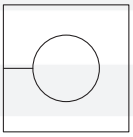
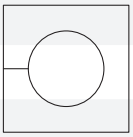
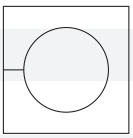
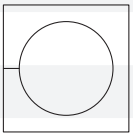
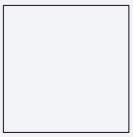
Specifications

Material	Elastomer, conductive
Flame class	in accordance with UL94-HB
Color	black
Operating temperature	-30°C to +80°C -22°F to +176°F
Properties	Halogen free, silicone free

Accessories

ST Plugs	87

KT grommets can be found from page 78 on

Description	Type	Order No.	Clamping range on the cable shield	PU
	EMC-KTG 13	99496	13 – 14 mm 0.512 – 0.551"	5
	EMC-KTG 14	99497	14 – 15 mm 0.551 – 0.59"	5
	EMC-KTG 15	99498	15 – 16 mm 0.59 – 0.63"	5
	EMC-KT 16	99475	16 – 17 mm 0.63 – 0.669"	5
	EMC-KT 17	99476	17 – 18 mm 0.669 – 0.709"	5
	EMC-KT 18	99477	18 – 19 mm 0.709 – 0.748"	5
	EMC-KT 19	99478	19 – 20 mm 0.748 – 0.787"	5
	EMC-KT 20	99479	20 – 21 mm 0.787 – 0.827"	5
	EMC-KT 21	99480	21 – 22 mm 0.827 – 0.866"	5
	EMC-KT 22	99481	22 – 23 mm 0.866 – 0.906"	5
	EMC-KT 23	99482	23 – 24 mm 0.906 – 0.945"	5
	EMC-KT 24	99483	24 – 25 mm 0.945 – 0.984"	5
	EMC-KT 25	99484	25 – 26 mm 0.984 – 1.024"	5
	EMC-KT 26	99485	26 – 27 mm 1.024 – 1.063"	5
	EMC-KT 27	99486	27 – 28 mm 1.063 – 1.102"	5
	EMC-KT 28	99487	28 – 29 mm 1.102 – 1.142"	5
	EMC-KT 29	99488	29 – 30 mm 1.142 – 1.181"	5
	EMC-KT 30	99489	30 – 31 mm 1.181 – 1.220"	5
	EMC-KT 31	99490	31 – 32 mm 1.220 – 1.260"	5
	EMC-KT 32	99491	32 – 33 mm 1.260 – 1.299"	5
	EMC-BTG	99495	blank grommet	5

Assembly Possibilities

	Var. 1	Var. 2	Var. 3	Var. 4	Var. 5
Outside	EMC-KEL	EMC-KEL	EMC-KEL	KEL-ER (U)	EMC-KEL
Inside	–	–	KEL-EMC-PFM	EMC-KEL	–
EMC: conducted	–	✓	✓	✓	**
EMC: field-bound	✓	✓	✓	✓	–
IP rating	IP54	not defined	IP54	IP66 (IP54)	not defined
Strain relief	✓	–	✓	✓	*

* Standard KT grommets only
** EMC-KT grommets only

Field-bound Disturbances with Strain Relief

The EMC cable entry frame (EMC-KEL) is screwed to the outside of the housing.
The cable shield is not exposed.

1

Outside

EMC KT grommet

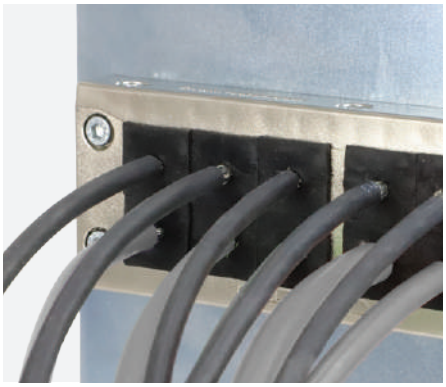
Not exposed cable shield

Profile

Conducted and Field-bound Disturbances

The EMC cable entry frame (EMC-KEL) is screwed to the outside of the housing. The cable shield is exposed in the area of the cable grommets.

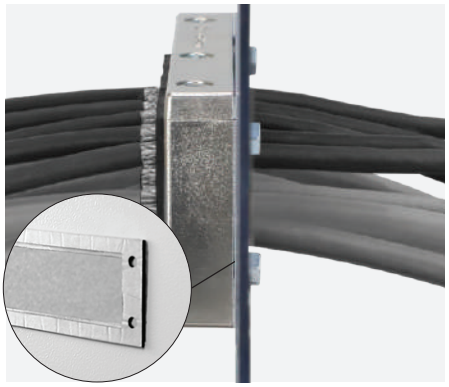
2



Outside

EMC KT grommet

Exposed cable shield



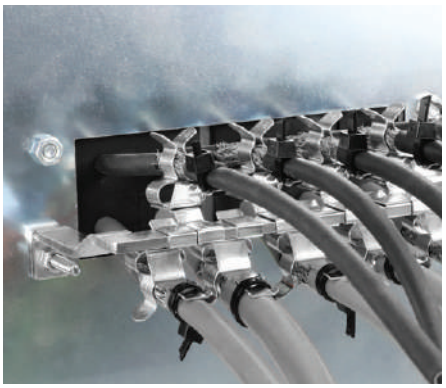
Profile

Conducted and Field-bound Disturbances with Strain Relief

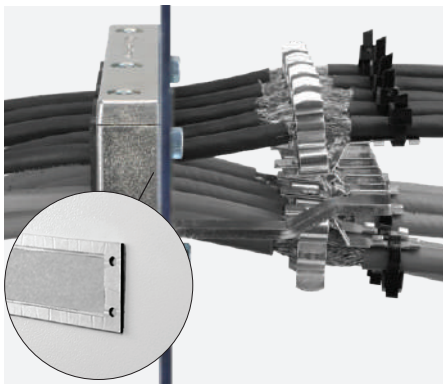
The EMC cable entry frame (EMC-KEL) is screwed to the outside of the housing.
Inside the housing, the EMC bracket KEL-EMC-PFM is mounted and the exposed cable shield is placed.

3

Outside



Inside



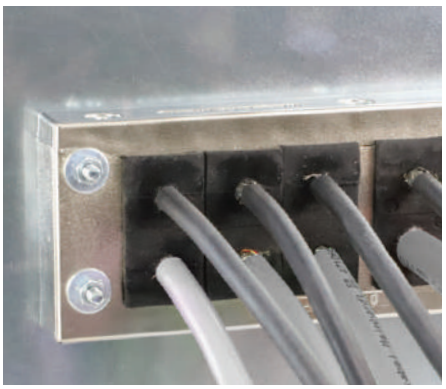
Profile

Conducted and Field-bound Disturbances with Strain Relief and IP66

A cable entry frame (e.g., KEL-ER or KEL-U) is bolted to the outside of the housing. Inside the housing, the EMC cable entry frame (EMC-KEL) is mounted and the cable shield is exposed in the area of the cable grommets.

4

Outside



Inside

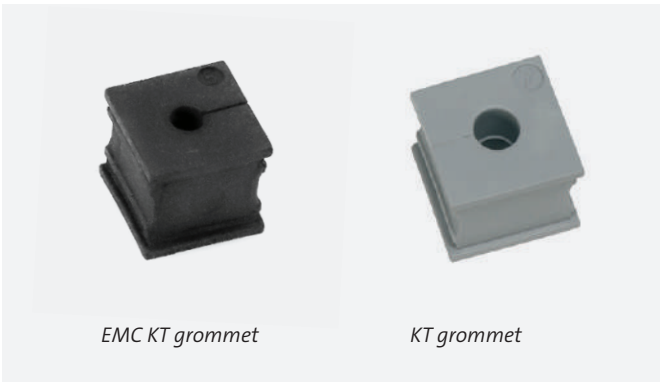
Profile

Conducted Disturbances with Single Strain Relief

The EMC cable entry frame (EMC-KEL) is screwed to the outside of the housing.
The cable shield is exposed in the area of the cable grommets. It's possible to use different grommets (KT & EMC-KT).

5

Outside



EMC KT grommet *KT grommet*

Different grommets

IP54 RoHS compliant Made in Germany

CONFiX™
Cable Conduit System, Cable Protection Conduits

CONFiX FWS-A

CONFiX FWS-B

CONFiX WS

CONFiX WST

CONFiX SH

IP54 RoHS compliant Made in Germany

The 90° angled conduit fitting CONFiX FWS is perfect for installation of parallel corrugated cable protection conduits, e.g. in machines, control panels or control cabinets. The liftable cover is tightly fixed by a hinge to the mounting box. Therefore, the system is very easy to handle.

Corrugated conduits CONFiX WS for cable routing are used where cables have to be protected from mechanical damage or certain weather conditions.

In addition, icotek offers split corrugated conduits CONFiX WST for routing pre-terminated cables and corresponding conduit clips CONFiX SH.

Advantages & benefits

1. Fast and easy assembly

The liftable cover of the bulkhead fitting CONFiX FWS is tightly fixed by a hinge to the mounting box. The system is therefore very easy to mount.

2. Easy to maintain

The split version of the corrugated conduits CONFiX WST offers the possibility of routing standard or pre-terminated cables in harsh environments.

3. Flexible

The corrugated conduits CONFiX WS can be used for various applications, depending on the material. Weather-resistant polyamide conduits for high mechanical requirements (indoor and outdoor use), polypropylene conduits with high resistance against acids/alkalis.

Conduit Pass-Through Systems

Bulkhead Fittings, Split | IP54
for Conduit Screw Connections/
Direct Conduit Pickup

CONFiX FWS

304

Bulkhead Fittings, Split | IP54
for Conduit Screw Connections/
Direct Conduit Pickup

CONFiX FWS

305

Cable Protection Conduits

Corrugated Conduits
NW 7.5 – NW 50

CONFiX WS

306 – 307

Corrugated Conduits, Split
for Cables with Connectors
NW 10 – NW 70

CONFiX WST

308

Conduit Clips
for Split Corrugated Conduits CONFiX WST

CONFiX SH

309

CONFiX™ FWS Assembly

Installation of CONFiX FWS
is quite easy:

1. Use top screw(s) to mount the FWS

2. Insert conduit

3. Secure and complete installation
   with two side screws

1 **Fix**

2 **Insert**

3 **Lock**

5
5.1
5.2
5.3

CONFiX™ FWS-A

Bulkhead Fittings
for Conduit Screw Connections

IP54 | RoHS compliant | Made in Germany

The 90° angled conduit fitting CONFiX FWS is for installation of parallel corrugated cable protection conduits, e.g. in machines, control panels or other electronic enclosures.

The liftable cover is tightly fixed by a hinge. Therefore, the system is fast and easy to install.

CONFiX FWS is offered in the following versions:

CONFiX FWS-A with metric internal thread M16 to M50

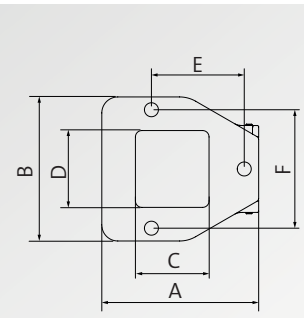
CONFiX FWS-B with a grooved conduit clip for types with sizes NW 13, 17, 23, 29, 37 and 50.

The available colors are gray (RAL 7011) and black (RAL 9005).

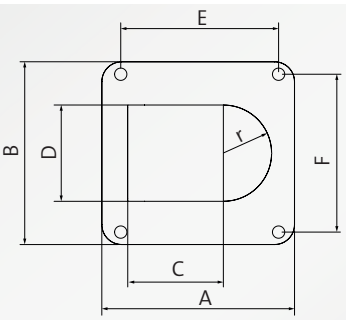
Accessories

CONFiX WS conduits 306 - 307
Punches CONFiX 398 - 399

Type	Internal Thread	Hole Ø [mm]	Size (A × B) [mm]	Cut-out (C × D) [mm]	Drill. Templ. (E × F) [mm]	Order No.	PU
CONFiX FWS-A 16	M16 × 1.5	3 × 4.3 0.118 x 0.169"	49 × 45 1.929 x 1.772"	22 × 22.6 0.886 x 0.89"	29 × 37 1.142 x 1.457"	31381 31380	10
CONFiX FWS-A 20	M20 × 1.5	3 × 4.3 0.118 x 0.169"	49 × 45 1.929 x 1.772"	22 × 22.6 0.886 x 0.89"	29 × 37 1.142 x 1.457"	31384 31383	10
CONFiX FWS-A 25	M25 × 1.5	3 × 6.6 0.118 x 0.26"	67 × 63 2.638 x 2.48"	37 × 28 1.457 x 1.102"	41.5 × 51.5 1.634 x 2.028"	31387 31386	10
CONFiX FWS-A 32	M32 × 1.5	4 × 6.6 0.157 x 0.26"	85.5 × 76 3.366 x 2.992"	41.9 × 40 1.65 x 1.575" r = 20/0.787"	64.5 × 64.5 2.539 x 2.539"	31390 31389	10
CONFiX FWS-A 40	M40 × 1.5	4 × 6.6 0.157 x 0.26"	97 × 92 3.819 x 3.622"	48.3 × 48.4 1.902 x 1.906" r = 24.2/0.953"	79.5 × 79.5 3.13 x 3.13"	31393 31392	5
CONFiX FWS-A 50	M50 × 1.5	4 × 6.6 0.157 x 0.26"	111.5 × 100.5 4.39 x 3.957"	53 × 60.5 2.087 x 2.382" r = 30.25/1.91"	87.5 × 87.5 3.445 x 3.445"	31396 31395	5



Size/Drilling template FWS-A 16 to 25



Size/Drilling template FWS-A 32 to 50

Matching sheet metal punches on p. 398

Metric internal thread for conduit screw connections

CONFiX™ FWS-B

Bulkhead Fittings for Direct Conduit Pickup

IP54 | RoHS compliant | Made in Germany

Advantages & Benefits

- Hinged cover
- Fast and easy installation
- Functional design
- Protection class IP54

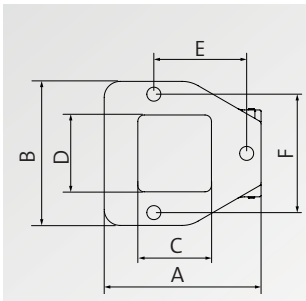
Specifications

Material	Polycarbonate (PC)
Color	■ black (RAL 9005)
	■ gray (RAL 7011)
IP rating	IP54
Flame class	UL94-V0, self-extinguishing
Operating temperature	-30°C to +100°C (static) -22°F to +212°F (static)
Properties	Halogen free, silicone free

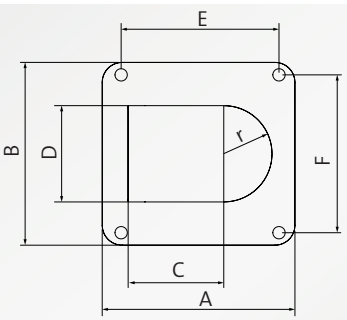
Accessories

CONFiX WS conduits	306 - 307
Punches CONFiX	398 - 399

Type	Dimension*	Hole Ø [mm]	Size (A × B) [mm]	Cut-out (C × D) [mm]	Drill. Templ. (E × F) [mm]	Order No.	PU
CONFiX FWS-B 11	NW 13	3 × 4.3 0.118 x 0.169"	49 × 45 1.929 x 1.772"	22 × 22.6 0.886 x 0.89"	29 × 37 1.142 x 1.457"	■ 31411 ■ 31410	10
CONFiX FWS-B 16	NW 17	3 × 4.3 0.118 x 0.169"	49 × 45 1.929 x 1.772"	22 × 22.6 0.886 x 0.89"	29 × 37 1.142 x 1.457"	■ 31414 ■ 31413	10
CONFiX FWS-B 21	NW 23	3 × 6.6 0.118 x 0.26"	67 × 63 2.638 x 2.48"	37 × 28 1.457 x 1.102"	41.5 × 51.5 1.634 x 2.028"	■ 31417 ■ 31416	10
CONFiX FWS-B 29	NW 29	4 × 6.6 0.157 x 0.26"	85.5 × 76 3.366 x 2.992"	41.9 × 40 1.65 x 1.575" r = 20/0.787"	64.5 × 64.5 2.539 x 2.539"	■ 31420 ■ 31419	10
CONFiX FWS-B 36	NW 37	4 × 6.6 0.157 x 0.26"	97 × 92 3.819 x 3.622"	48.3 × 48.4 1.902 x 1.906" r = 24.2/0.953"	79.5 × 79.5 3.13 x 3.13"	■ 31423 ■ 31422	5
CONFiX FWS-B 48	NW 50	4 × 6.6 0.157 x 0.26"	111.5 × 100.5 4.39 x 3.957"	53 × 60.5 2.087 x 2.382" r = 30.25/1.91"	87.5 × 87.5 3.445 x 3.445"	■ 31426 ■ 31425	5



Size/Drilling template FWS-B 11 to 21



Size/Drilling template FWS-B 29 to 48

Matching sheet metal punches on p. 398

Grooved conduit clip

Fixed cover due to hinges

* For parallel corrugated cable protection conduit with dimension (NW)

CONFiX™ WS
Corrugated Conduits

RoHS compliant | Made in Germany

Parallel corrugated conduits for cable routing are used where cables have to be protected from mechanical damage or certain weather conditions.

icotek provides conduits in sizes NW 7.5, 8.5, 10, 13, 17, 23, 29, 37, and 50.
Conduits from size NW 13 can be mounted with CONFiX FWS bulkhead fittings.

Parallel corrugated conduits are available in 3 different versions:

- CONFiX WS-PA: Polyamide conduit for high mechanical requirements (e.g. engine compartments, car bodies, construction machines, ship building, rail transportation technology, switch cabinets).

→ **Suitable for ground installation**

- CONFiX WS-PAL (light): Polyamide conduit for high mechanical requirements

→ **Suitable for suspended installation**

- CONFiX WS-PP: Polypropylene conduit for use in engine compartments, car bodies and for static installation at machinery and plant engineering.

→ **Advantages: Cost-effective, flame class UL94-V2, temperature resistant, resistant to chemicals, UV resistant**

Type	External Ø	Internal Ø	Compatible with	Order No.	PU (Length)
CONFiX WS-G-PA-NW 7.5	Ø 10 mm/ 0.394"	Ø 6.7 mm/ 0.264"	–	31550	50 m
CONFiX WS-B-PA-NW 7.5	Ø 10 mm/ 0.394"	Ø 6.7 mm/ 0.264"	–	31570	50 m
CONFiX WS-G-PA-NW 8.5	Ø 11.4 mm/ 0.449"	Ø 8.4 mm/ 0.331"	–	31552	50 m
CONFiX WS-B-PA-NW 8.5	Ø 11.4 mm/ 0.449"	Ø 8.4 mm/ 0.331"	–	31572	50 m
CONFiX WS-G-PA-NW 10	Ø 13 mm/ 0.512"	Ø 9.9 mm/ 0.39"	–	31554	50 m
CONFiX WS-B-PA-NW 10	Ø 13 mm/ 0.512"	Ø 9.9 mm/ 0.39"	–	31574	50 m
CONFiX WS-G-PA-NW 13	Ø 15.8 mm/ 0.622"	Ø 12.7 mm/ 0.5"	CONFiX FWS-B 11	31556	50 m
CONFiX WS-B-PA-NW 13	Ø 15.8 mm/ 0.622"	Ø 12.7 mm/ 0.5"	CONFiX FWS-B 11	31576	50 m
CONFiX WS-G-PA-NW 17	Ø 21.2 mm/ 0.835"	Ø 16.6 mm/ 0.654"	CONFiX FWS-B 16	31558	50 m
CONFiX WS-B-PA-NW 17	Ø 21.2 mm/ 0.835"	Ø 16.6 mm/ 0.654"	CONFiX FWS-B 16	31578	50 m
CONFiX WS-G-PA-NW 23	Ø 28.3 mm/ 1.114"	Ø 23.2 mm/ 0.913"	CONFiX FWS-B 21	31560	50 m
CONFiX WS-B-PA-NW 23	Ø 28.3 mm/ 1.114"	Ø 23.2 mm/ 0.913"	CONFiX FWS-B 21	31580	50 m
CONFiX WS-G-PA-NW 29	Ø 34.5 mm/ 1.358"	Ø 29 mm/ 1.142"	CONFiX FWS-B 29	31562	25 m
CONFiX WS-B-PA-NW 29	Ø 34.5 mm/ 1.358"	Ø 29 mm/ 1.142"	CONFiX FWS-B 29	31582	25 m
CONFiX WS-G-PA-NW 37	Ø 42.4 mm/ 1.669"	Ø 36 mm/ 1.417"	CONFiX FWS-B 36	31564	25 m
CONFiX WS-B-PA-NW 37	Ø 42.4 mm/ 1.669"	Ø 36 mm/ 1.417"	CONFiX FWS-B 36	31584	25 m
CONFiX WS-G-PA-NW 50	Ø 54.5 mm/ 2.146"	Ø 47.7 mm/ 1.878"	CONFiX FWS-B 48	31566	25 m
CONFiX WS-B-PA-NW 50	Ø 54.5 mm/ 2.146"	Ø 47.7 mm/ 1.878"	CONFiX FWS-B 48	31586	25 m

Compatible with CONFiX FWS-B

CONFiX™ WS
Corrugated Conduits

RoHS compliant | Made in Germany

Specifications WS-PA

Material	Polyamide (PA)
Colour	■ black
	■ gray
Flame class	UL 94-HB
Temperature	-40°C to +120°C
Properties	Halogen free, weather-resistant

Specifications WS-PAL

Material	Polyamide (PA)
Colour	■ black
Flame class	UL 94-HB
Temperature	-40°C to +120°C
Properties	Halogen free, weather-resistant

Specifications WS-PP

Material	Polypropylene (PP)
Colour	■ black
Flame class	UL 94 V-2, self-extinguishing
Temperature	-40°C to +135°C
Properties	Halogen free
	UV resistant
	High resistance against acids/alkalis

Compatible with

CONFiX FWS Bulkhead fitting	304 - 305
MSMC cable clamp	231

Type	External Ø	Internal Ø	Compatible with	Order No.	PU (Length)
CONFiX WS-B-PAL-NW 7.5	Ø 10 mm/ 0.394"	Ø 6.7 mm/ 0.264"	–	■ 31590	50 m
CONFiX WS-B-PAL-NW 8.5	Ø 11.4 mm/ 0.449"	Ø 8.4 mm/ 0.331"	–	■ 31592	50 m
CONFiX WS-B-PAL-NW 10	Ø 13 mm/ 0.512"	Ø 9.9 mm/ 0.39"	–	■ 31594	50 m
CONFiX WS-B-PAL-NW 13	Ø 15.8 mm/ 0.622"	Ø 12.7 mm/ 0.5"	CONFiX FWS-B 11	■ 31596	50 m
CONFiX WS-B-PAL-NW 17	Ø 21.2 mm/ 0.835"	Ø 16.6 mm/ 0.654"	CONFiX FWS-B 16	■ 31598	50 m
CONFiX WS-B-PAL-NW 23	Ø 28.3 mm/ 1.114"	Ø 23.2 mm/ 0.913"	CONFiX FWS-B 21	■ 31600	50 m
CONFiX WS-B-PAL-NW 29	Ø 34.5 mm/ 1.358"	Ø 29 mm/ 1.142"	CONFiX FWS-B 29	■ 31602	25 m
CONFiX WS-B-PAL-NW 37	Ø 42.4 mm/ 1.669"	Ø 36 mm/ 1.417"	CONFiX FWS-B 36	■ 31604	25 m
CONFiX WS-B-PAL-NW 50	Ø 54.5 mm/ 2.146"	Ø 47.7 mm/ 1.878"	CONFiX FWS-B 48	■ 31606	25 m
CONFiX WS-B-PP-NW 7.5	Ø 10 mm/ 0.394"	Ø 7.1 mm/ 0.280"	–	■ 31610	50 m
CONFiX WS-B-PP-NW 8.5	Ø 11.4 mm/ 0.449"	Ø 8.4 mm/ 0.331"	–	■ 31612	50 m
CONFiX WS-B-PP-NW 10	Ø 13 mm/ 0.512"	Ø 9.9 mm/ 0.39"	–	■ 31614	50 m
CONFiX WS-B-PP-NW 13	Ø 15.8 mm/ 0.622"	Ø 12.7 mm/ 0.5"	CONFiX FWS-B 11	■ 31616	50 m
CONFiX WS-B-PP-NW 17	Ø 21.2 mm/ 0.835"	Ø 16.6 mm/ 0.654"	CONFiX FWS-B 16	■ 31618	50 m
CONFiX WS-B-PP-NW 23	Ø 28.3 mm/ 1.114"	Ø 23.2 mm/ 0.913"	CONFiX FWS-B 21	■ 31620	50 m
CONFiX WS-B-PP-NW 29	Ø 34.5 mm/ 1.358"	Ø 29 mm/ 1.142"	CONFiX FWS-B 29	■ 31622	25 m
CONFiX WS-B-PP-NW 37	Ø 42.4 mm/ 1.669"	Ø 36 mm/ 1.417"	CONFiX FWS-B 36	■ 31624	25 m
CONFiX WS-B-PP-NW 50	Ø 54.5 mm/ 2.146"	Ø 47.7 mm/ 1.878"	CONFiX FWS-B 48	■ 31626	25 m

* For parallel corrugated cable protection conduit with dimension (NW)

CONFiX™ WST
Split Corrugated Conduits

RoHS compliant | Made in Germany

The CONFiX WST is a two-part corrugated conduit that is perfect for routing cables with or without connectors in harsh environments.

In conjunction with e.g. KVT-W90, a high degree of flexibility is achieved. Numerous conduit sizes can be used thanks to the wide variety of split grommets offered.

The length of the CONFiX WST split corrugated conduit can be customized to your application. All conduits are available by the meter (0.5 m steps).

Advantages & benefits

- Containing pre-terminated cables, warranty of cable remains
- Retrofitting and maintenance carried out easily and quickly

Specifications

Material	Polypropylene, black
Flame class	UL 94-V2
Operating temperature	- 30°C to + 105°C -22°F to +221°F
Properties	UV resistant

Compatible with

CONFiX SH Conduit clip	309
Cable entry systems for pre-terminated cable	10 - 135
Cable entry systems for standard cables	136 - 195
MSMC cable clamp	231

Type	Order No.	Internal Ø	External Ø	Compatible with	Compatible with CONFIX FWS-B	Dimensions	Ring length*	Bending radius (static)
CONFiX WST NW 10	31200	8.7 mm/ 0.343"	13.6 mm/ 0.535"	KT 13	–	NW 10	50 m*	25 mm
CONFiX WST NW 14	31210	12.5 mm/ 0.492"	18.5 mm/ 0.728"	KT 18	31411 31410	NW 14	50 m*	35 mm
CONFiX WST NW 16	31215	16 mm/ 0.630"	21.5 mm/ 0.846"	KT 22	31414 31413	NW 16	50 m*	40 mm
CONFiX WST NW 20	31220	19.5 mm/ 0.768"	25.5 mm/ 1.004"	KT 25	–	NW 20	50 m*	45 mm
CONFiX WST NW 23	31230	24.2 mm/ 0.953"	31 mm/ 1.22"	KT 30	31417 31416	NW 23	50 m*	50 mm
CONFiX WST NW 29	31235	27.3 mm/ 1.075"	35.5 mm/ 1.398"	KTMB-P	31420 31419	NW 29	25 m*	90 mm
CONFiX WST NW 37	31240	31 mm/ 1.22"	41.4 mm/ 1.63"	KTMB-P	31423 31422	NW 37	25 m*	110 mm
CONFiX WST NW 45	31250	42.7 mm/ 1.681"	54 mm/ 2.126"	KTMB-Q	31426 31425	NW 45	25 m*	130 mm
CONFiX WST NW 70	31260	66.5 mm/ 2.618"	79.8 mm/ 3.142"	KEL-ULTRA flex	–	NW 70	10 m*	190 mm

Individual lengths are possible!

*All conduits are also available by the metre (0.5 m steps).

CONFiX™ SH
Conduit Clips for WST

RoHS compliant

CONFiX SH Conduit clips are a one-piece clamping system to provide secure mounting points for corrugated conduit systems.

The clips are secured to their mounting position through a central mounting point with a hexagonal counter-bore.

Specifications

Material	Polyamide (PA), black
Flame class	UL94-V2, self-extinguishing
Operating Temperature	- 40°C to + 120°C -40°F to +248°F
Properties	Halogen free, silicone free

Compatible with

CONFiX WST
Split corrugated conduit 308

Type	Order No.	Suitable conduit	Fixing hole	Width [mm]	Height [mm]	PU
CONFiX SH 10	31300	WST NW 10	M5	18.5	23	10
CONFiX SH 14	31310	WST NW 14	M5	24	27.5	10
CONFiX SH 16	31315	WST NW 16	M6	30	35	10
CONFiX SH 20	31320	WST NW 20	M6	35	38	10
CONFiX SH 23	31330	WST NW 23	M6	41.6	43	10
CONFiX SH 29	31335	WST NW 29	M6	48	50.5	10
CONFiX SH 37	31340	WST NW 37	M6	56	56.6	10
CONFiX SH 45	31350	WST NW 45	M6	67	68	10
CONFiX SH 70	31360	WST NW 70	M6	100	100	10

c UL us | IP68 | IP66 | UL TYPE 4X UL 50E | RoHS compliant | Made in Germany | UL-94 V0 | +140°C -40°C | 1–65 mm

Enclosure Accessories
Gland Plates, Flange Plates and Accessories

KDR-ESR-VX25

MP

FP-KX/KL

BPK-SNAP

TE-M

KEA

GMT

PCE

Enclosure Accessories
6
6.1
6.2
6.3
6.4
6.5
6.6

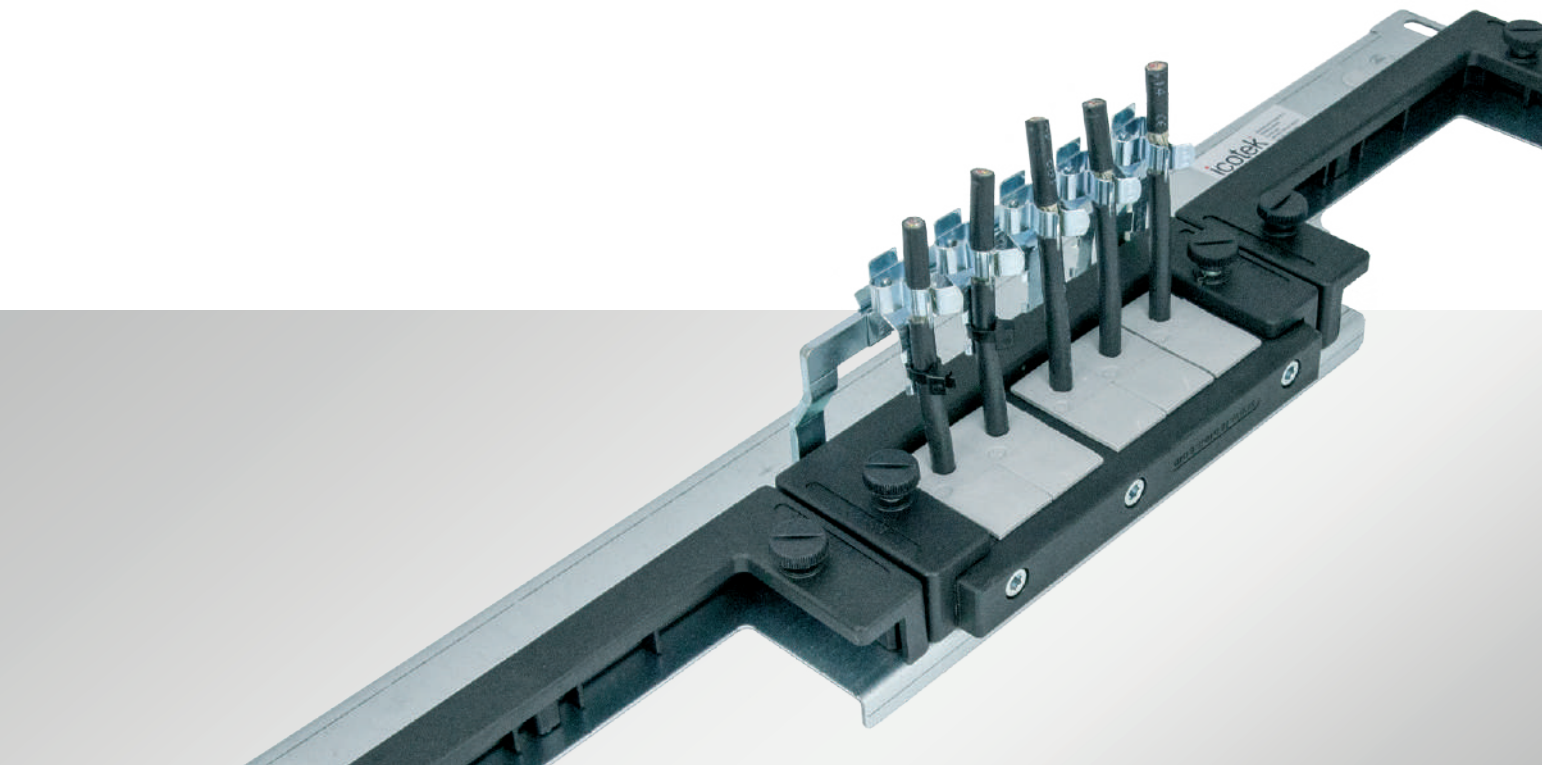
6 Enclosure Accessories
Gland Plates, Flange Plates and Accessories

Ready-to-install enclosure gland plates, onto which the pre-assembled cable entry frames can be directly screwed, ensure quick and easy cable entry into the enclosure base.

Cables are automatically relieved of tension and held securely in the enclosure thanks to the 'integrated' strain relief of the cable entries. The fact that the systems are fully separable is particularly advantageous for maintenance or retrofitting, as there is no need to disconnect the cables.

Complete flange plates for Rittal AX enclosures, AE enclosures, KX/KL terminal boxes or BG bus enclosures, as well as prepared module plates with standard cut-outs for mounting icotek cable entry systems in the enclosure base, are also available in many variants.

icotek offers a wide range of useful accessories for enclosures for the installation of cable entry systems and cable glands as well as for cable management.

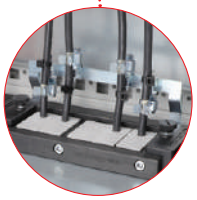


The patented KDR Base Entry Systems

KDR-ESR-VX25

KDRS-ESR-VX25

Routing of pre-terminated cables of up to 65 mm in diameter (KEL-JUMBO)



Optional with EMC cable assembly KDR-EMC-PFM

Fast and tool-less mounting of KEL-U cable entry frames

Routing of pre-terminated cables of up to 35 mm in diameter (KEL-U 24)

Straight cable routing into the cable duct

6
6.1
6.2
6.3
6.4
6.5
6.6

6 Enclosure Accessories
Gland Plates, Flange Plates and Accessories

Gland Plates and Module Plates for Enclosures

Rittal/Häwa
Enclosure Gland Plates
with Slide Frames for Cable Entry Frames

KDR-ESR-VX25 / KDRS-ESR-VX25 / KDR-ESR-HW

316 – 325

Rittal
Enclosure Gland Plates
for Cable Entry Frames

KDR-VX25

320 – 321

Rittal
Enclosure Gland Plates
Split, for Cable Entry Frames

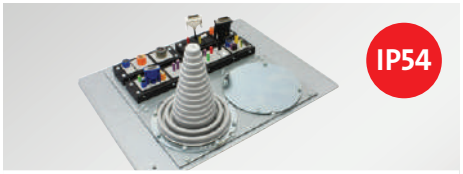
KDR 2-VX25 / KDR 2-TS8

324 – 325

Rittal / Lohmeier
Module Plates
for Cable Entry Components

MP

326 – 327



Rittal
Enclosure Gland Plates
for MP Module Plates

KDR-BMP-VX25 / KDR-BMP-TS8

328 – 331

Flange Plates for Enclosures, Blank Plates

Rittal
Flange Plates for Enclosures
for Cable Entry Components

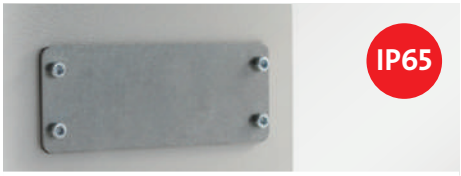
FP-AX / FP-AE / FP-KX / FP-KL

332 – 339

Fibox
Flange Plates for Enclosures
for Cable Entry Components

FP-BG / FP-FL21

340 – 341



Blank Plates | up to UL type 12

BPK / BPK-RF / BPM / BPK-SNAP

342 – 344

Thread Extension and Accessories

Thread Extension
for Cable Glands and Cable Entry Plates
M25, M32, M50, M63

TE-M

346 – 349

Accessories for TE-M
Adapter, Cover Panel

TE-MA, AB-M

350 – 351

KEA 90° Cable Entry Adapter

90° Cable Entry Adapter
for Cable Entry Systems

KEA

352 – 355

Further Accessories for Enclosures

Hexagonal Locknuts
M16 – M85

KGM / GM / GMT

358

Supports
for TS35 Rails and Bus Bars

MF

359

Sealing Bead
for Enclosure Base Plates

360

Drainage Device

361

Pressure Compensation Element
with Metric Thread

PCE M12 x 1,5

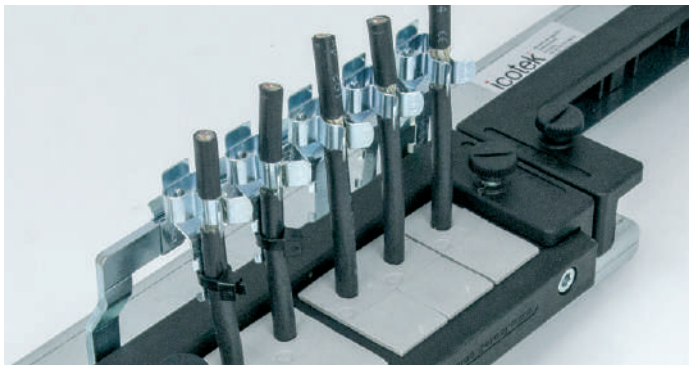
361

KDR-ESR-VX25
Rittal Enclosure Gland Plate with Slide Frames

IP54 | HL3 EN 45545-2 | RoHS compliant | Made in Germany

The KDR-ESR is a one-piece plate to be assembled on enclosure bases. Slide frames for the KEL cable entry frames are already pre-assembled.

After installing all cables into the KEL frames, they are easily and quickly inserted into the slide frames and fixed. During maintenance, the KEL frames are removed without tools from the slide frames. Due to the combination KDR-ESR and KEL cable entry frames, a rating of IP54 is achieved (with correct selection of cable grommets). Slide frames which are no longer required are closed with BPK-SNAP blank plates.



Advantages & benefits

- Easy assembly and removal
- Prepared for the assembly of KDR-EMV-PFM
- Ideal for maintenance and retrofitting
- Reserve can be scheduled
- Space-saving solution
- No additional sheet metal work required

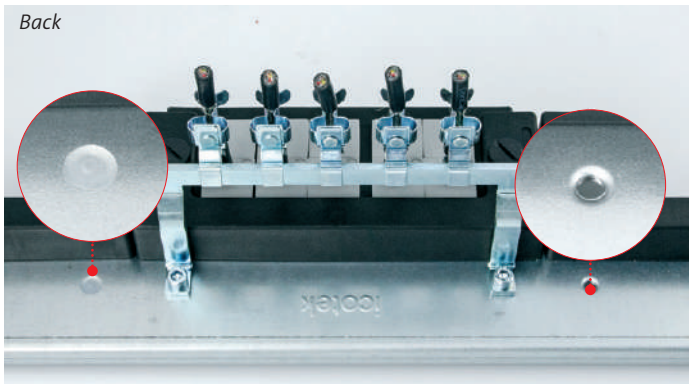
Specifications

Material	Gland plate: Sheet steel, zinc-plated KDR-ESR Frame: Polyamide (PA)
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable entry devices
Operating temperature	- 40°C to + 90°C (static) - 40°F to + 194°F (static)
Properties	Halogen free, silicone free

Compatible with

KEL(-U) 16 / 24 Cable entry frames	21
KEL-ER 16 / 24 Cable entry frames	17
KEL-JUMBO Cable entry frames	58 - 59
BPK-SNAP 16 / 24 Blank plates	344

Slide frames which are no longer required are closed with BPK-SNAP blank plates



Back

Prepared for the assembly of KDR-EMV-PFM. The plates are fitted with threaded screw holes (M5), blocked with plugs. These can be easily removed if necessary. By using the KDR-EMV-PFM, there is no need to additionally install a DIN rail/bus bar above the cable entry, which would otherwise have to be attached in order to implement the EMC connection.

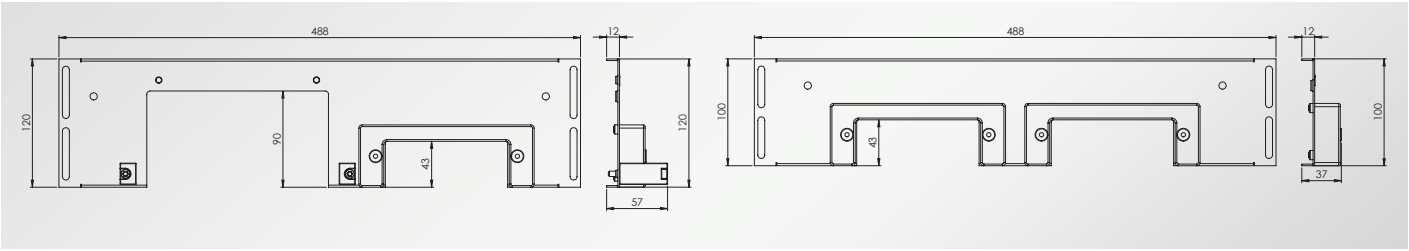
KDR-ESR-VX25

Rittal Enclosure Gland Plate with Slide Frames

IP54 | HL3 EN 45545-2 | RoHS compliant | Made in Germany

Type	Enclosure width	Total length gland plate	Sight size of base plate opening	No. of possible cable entries				Order No.
				JUMBO 1	JUMBO 2	KEL(-U) 16|...	KEL(-U) 24|...	
KDR-ESR-VX25-600	600 mm / 23.622 "	488 mm / 19.213 "	452 mm / 17.795 "	-	-	-	2	44500
KDR-ESR-VX25-600	600 mm / 23.622 "	488 mm / 19.213 "	452 mm / 17.795 "	-	1	-	1	44501
KDR-ESR-VX25-600	600 mm / 23.622 "	488 mm / 19.213 "	452 mm / 17.795 "	1	-	2	-	44502
KDR-ESR-VX25-800	800 mm / 31.496 "	688 mm / 27.087 "	652 mm / 25.669 "	-	-	1	3	44503
KDR-ESR-VX25-800	800 mm / 31.496 "	688 mm / 27.087 "	652 mm / 25.669 "	1	-	1	2	44504
KDR-ESR-VX25-800	800 mm / 31.496 "	688 mm / 27.087 "	652 mm / 25.669 "	-	1	-	2	44505
KDR-ESR-VX25-1000	1000 mm* / 39.37 " with division bar	438 mm / 17.244 "	402 mm / 15,827 "	-	-	-	2	44506
KDR-ESR-VX25-1000	1000 mm* / 39.37 " with division bar	438 mm / 17.244 "	402 mm / 15,827 "	1	-	-	1	44507
KDR-ESR-VX25-1000	1000 mm* / 39.37 " with division bar	438 mm / 17.244 "	402 mm / 15,827 "	-	1	1	-	44508
KDR-ESR-VX25-1200	1200 mm* / 47.244 "	538 mm / 21.181 "	502 mm / 19,764 "	-	-	-	3	44509
KDR-ESR-VX25-1200	1200 mm* / 47.244 "	538 mm / 21.181 "	502 mm / 19,764 "	1	-	1	1	44510
KDR-ESR-VX25-1200	1200 mm* / 47.244 "	538 mm / 21.181 "	502 mm / 19,764 "	-	1	-	1	44511

* if both fields of the enclosure are fitted, two complete gland plates are required.



EMC cable assembly for KDR-ESR-VX25

Type	Order No.	Material	PU
KDR-EMC-PFM 16	39192	Steel, zinc plated	1
KDR-EMC-PFM 24	39191	Steel, zinc plated	1

Suitable EMC shield clamps can be found on pages 252, 253 (PFSZ, SKS, SS|SK, SS|SKZ).

KDRS-ESR-VX25

Rittal Enclosure Gland Plate, Narrow with Slide Frames

IP54 | HL3 EN 45545-2 | RoHS compliant | Made in Germany

The KDRS-ESR is a one-piece plate to be assembled on enclosure bases. Slide frames for the KEL cable entry frames are already pre-assembled.

After installing all cables into the KEL frames, they are easily and quickly inserted into the slide frames and fixed. During maintenance, the KEL frames are removed without tools from the slide frames. Due to the combination KDRS-ESR and KEL cable entry frames, a rating of IP54 is achieved (with correct selection of cable grommets). Slide frames which are no longer required, are closed with BPK-SNAP blank plates.

Advantages & benefits

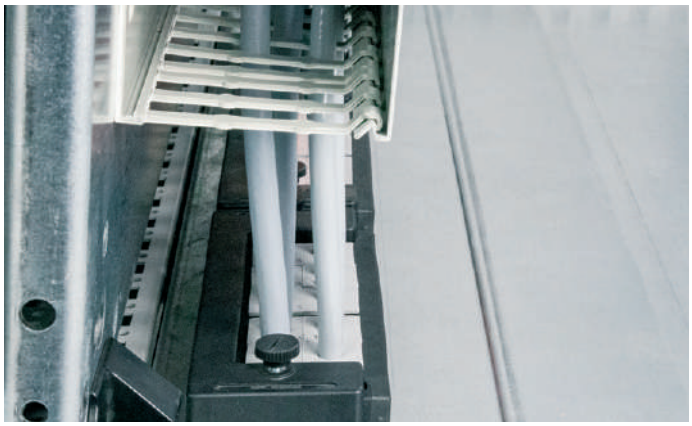
- Easy assembly and removal
- The KDRS-ESR floor plate is very narrow. As a result, the inserted cables are inserted straight into the cable duct.
- Ideal for maintenance and retrofitting
- Reserve can be scheduled
- Space-saving solution
- No additional sheet metal work required

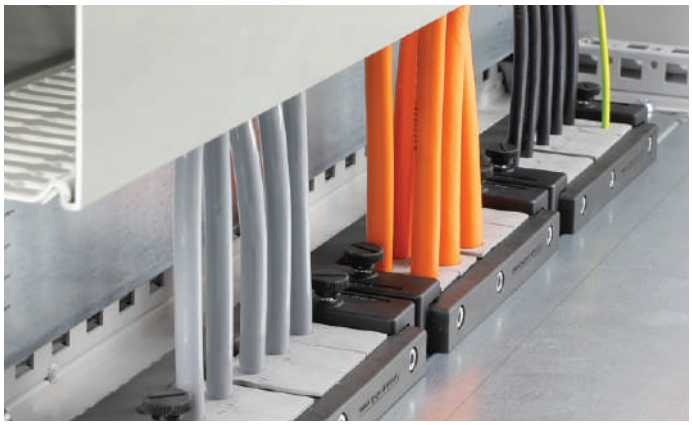
Specifications

Material	Gland plate: Sheet steel, zinc-plated KDR-ESR Frame: Polyamide (PA)
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable entry devices
Operating temperature	-40°C to +90°C (static) - 40°F to + 194°F (static)
Properties	Halogen free, silicone free

Compatible with

KEL(-U) 16 / 24 Cable entry frames	21
KEL-ER 16 / 24 Cable entry frames	17
BPK-SNAP 16 / 24 Blank plates	344





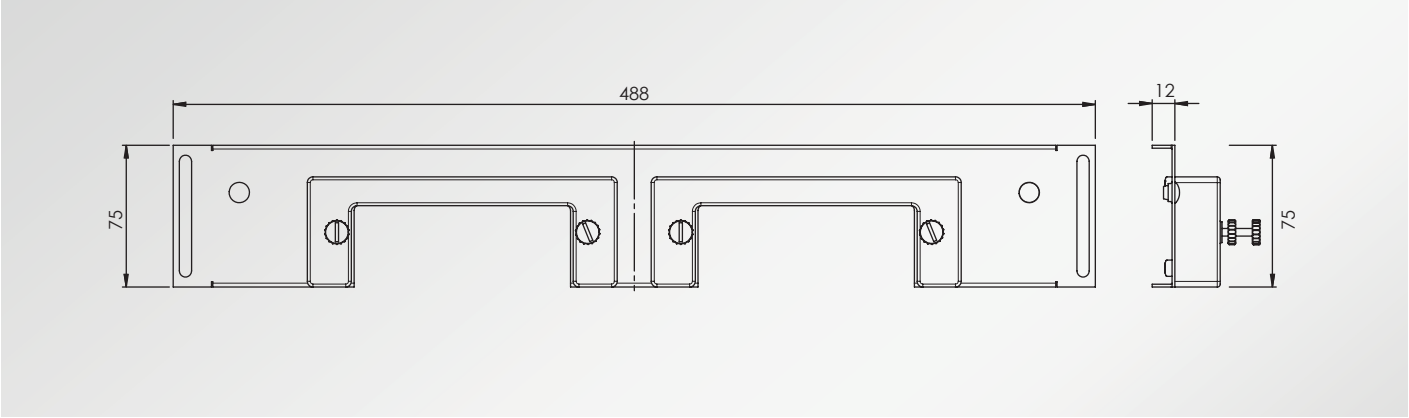
Advantage KDRS: Straight cable routing into the cable duct due to the extremely narrow gland plate

KDRS-ESR-VX25

Rittal Enclosure Gland Plate, Narrow with Slide Frames

IP54 | HL3 EN 45545-2 | RoHS compliant | Made in Germany

Type	Enclosure width	Total length gland plate	Sight size of base plate opening	No. of possible cable entries				Order No.
				JUMBO 1	JUMBO 2	KEL(-U) 16|...	KEL(-U) 24|...	
KDRS-ESR-VX25-600 (narrow) 75 mm	600 mm/23.622"	488 mm/19.213"	452 mm/17.795"	–	–	–	2	44512
KDRS-ESR-VX25-800 (narrow) 75 mm	800 mm/31.496"	688 mm/27.087"	652 mm/25.669"	–	–	–	3	44513
KDRS-ESR-VX25-1000 (narrow) 75 mm	1000 mm*/39.37"	438 mm/17.244"	402 mm/15,827"	–	–	–	2	44514
KDRS-ESR-VX25-1200 (narrow) 75 mm	1200 mm*/47.244"	538 mm/21.181"	502 mm/19,764"	–	–	–	3	44515



Sealing tape
Order No. 42999 (L: 1 m)
Order No. 42999.10000 (L: 10 m)

icotek can also produce enclosure gland plates for numerous other enclosure brands and in other sizes according to your wishes. Ask us at pm@icotek.com.

* if both fields of the enclosure are fitted, two complete gland plates are required.

KDR-VX25
Rittal VX25 Enclosure Gland Plate

IP54 | HL3 EN 45545-2 | RoHS compliant | Made in Germany

KDR-VX25 is a one-piece gland plate to be assembled on enclosure bases. The gland plates are already equipped with cut-outs for the KEL 24 or KEL-JUMBO cable entry systems or the KEL-DPR cable entry plate.

The fastening threads for the KEL frames are already integrated.

Advantages

- Easy assembly of the KEL(-U) 24, KEL-ER 24, KEL-FA 24, KEL-QUICK, KEL-DPR bzw. KEL-JUMBO
- Prepared for the assembly of KDR-EMV-PFM
- Threaded pull-through for earthing tape integrated
- Ideal for maintenance and retrofitting
- Reserve can be scheduled
- Space-saving solution
- No additional sheet metal work required
- Very large connectors can be inserted with ease
- Cut-outs which are no longer required are closed with BPM or BPK blank plates
- The KDR-VX25 gland plate is designed for Rittal VX25 enclosures. Other sizes are also available on request.

Specifications

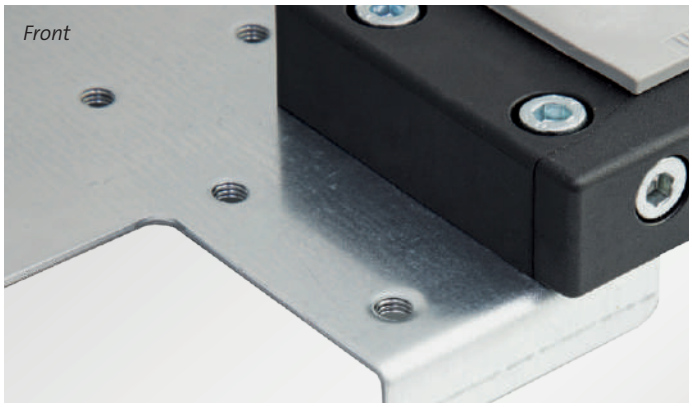
Material	Sheet steel, zinc-plated

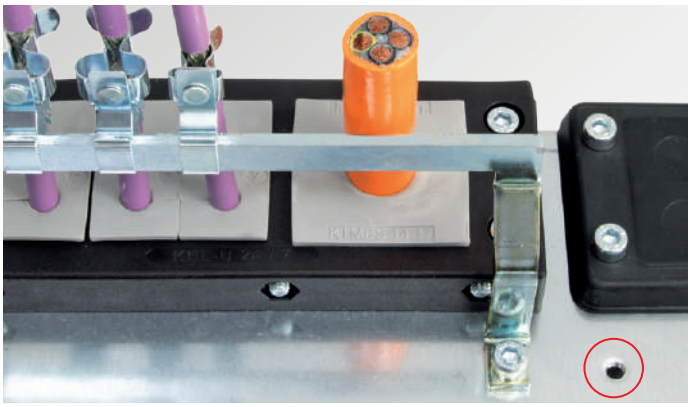
Compatible with

KEL(-U) 24 Cable entry frames	21
KEL-ER 24 Cable entry frames	17
KEL-FA 24 Cable entry frames	25
KEL-QUICK Cable entry frames	107 - 109
KEL-JUMBO Cable entry frames	58 - 59
KEL-DPR Cable entry plates	166 - 167
BPM, BPK Blank plates	342 - 343

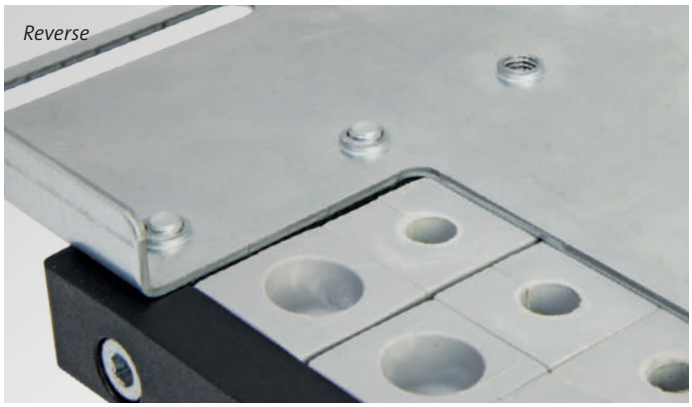
Accessories

KDR-EMV-PFM 24	371
KEL-EMV-PFM 24	275





Prepared for the assembly of KDR-EMV-PFM. The plates are fitted with threaded screw holes (M5), blocked with plugs.

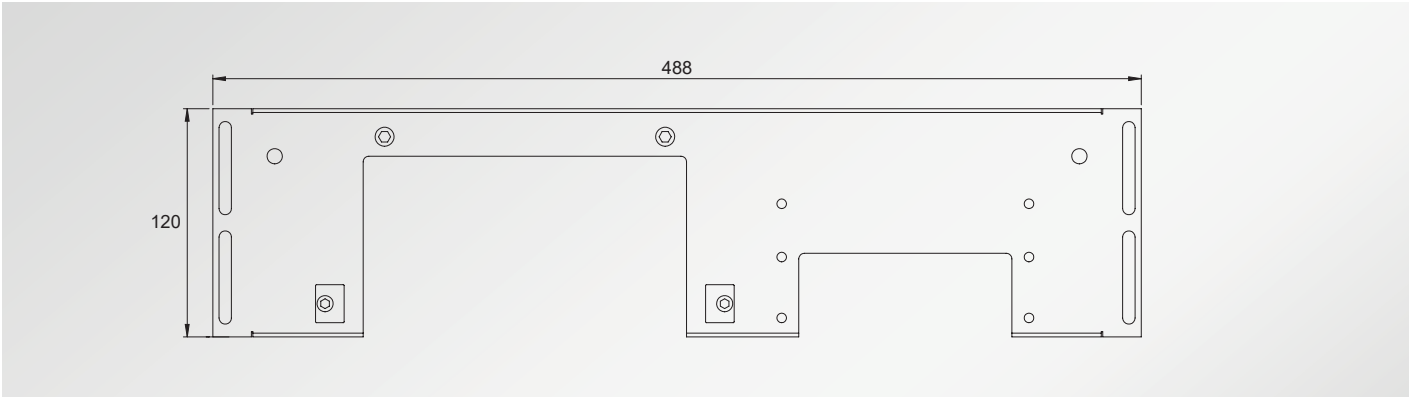


The fastening threads for the KEL frames are already integrated

KDR-VX25
Rittal VX25 Enclosure Gland Plate

IP54 | HL3 EN 45545-2 | RoHS compliant | Made in Germany

Type	Enclosure width	Total length gland plate	Sight size of base plate opening	No. of possible cable entries JUMBO 1	JUMBO 2	KEL(-U) 24|...	Order No.
KDR-VX25-600	600 mm	488 mm	452 mm	–	–	2	44300
KDR-VX25-600	600 mm	488 mm	452 mm	–	1	1	44301
KDR-VX25-600	600 mm	488 mm	452 mm	1	–	2	44302
KDR-VX25-800	800 mm	688 mm	652 mm	–	–	4	44303
KDR-VX25-800	800 mm	688 mm	652 mm	1	–	3	44304
KDR-VX25-800	800 mm	688 mm	652 mm	–	1	2	44305
KDR-VX25-1000	1000 mm	438 mm	402 mm	–	–	2	44306
KDR-VX25-1000	1000 mm	438 mm	402 mm	1	–	1	44307
KDR-VX25-1000	1000 mm	438 mm	402 mm	–	1	1	44308
KDR-VX25-1200	1200 mm	538 mm	502 mm	–	–	3	44309
KDR-VX25-1200	1200 mm	538 mm	502 mm	1	–	2	44310
KDR-VX25-1200	1200 mm	538 mm	502 mm	–	1	1	44311



KDR-ESR-HW

Enclosure Gland Plate with Slide Frames for Häwa Enclosures

IP54 | HL3 EN 45545-2 | RoHS compliant | Made in Germany

The KDR-ESR HW is a one-piece plate to be assembled on enclosure bases. Slide frames for the KEL cable entry frames are already pre-assembled. After installing all cables into the KEL frames, they are easily and quickly inserted into the slide frames and fixed. Slide frames which are no longer required are closed with BPK-SNAP blank plates. The gland plate KDR-ESR HW is designed for Häwa enclosures series H395 and series H390.

Advantages & Benefits

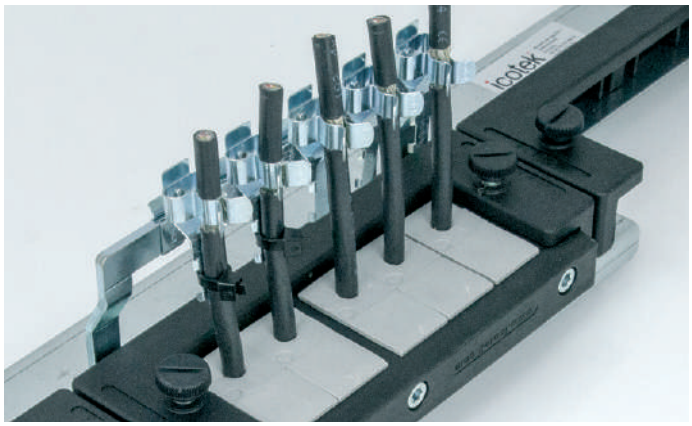
- Easy assembly and removal
- Even large connectors can be installed easily
- Retrofitting possible without disconnecting cables. Everything can be built around the cables
- Prepared for the assembly of KDR-EMV-PFM
- No additional sheet metal work required
- The gland plate KDR-ESR HW is designed for Häwa enclosures series H395 and series H390
- Other sizes are available on request

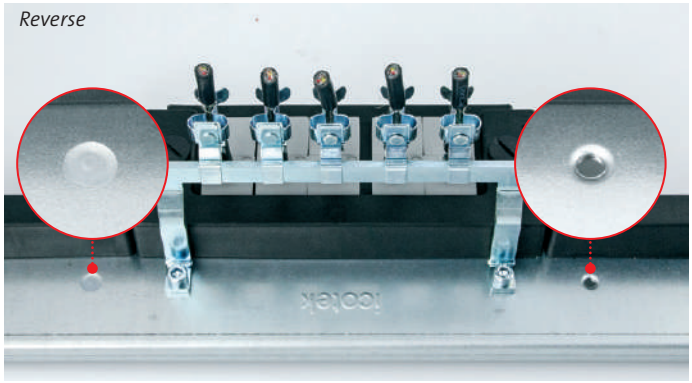
Specifications

Material	Gland plate: Sheet steel, zinc-plated KDR-ESR Frame: Polyamide (PA))
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP54, with gasket and correct selection of cable entry devices
Operating Temperature	-40°C to + 90°C (static) - 40°F to + 194°F (static)
Properties	Halogen free, silicone free

Compatible with

KEL(-U) 24 Cable entry frames	21
KEL-ER 24 Cable entry frames	17
KEL-JUMBO Cable entry frames	58 - 59
BPK-SNAP 24 Blank plates	344





Prepared for the assembly of KDR-EMV-PFM. The plates are fitted with threaded screw holes (M5), blocked with plugs. These can be easily removed if necessary. By using the KDR-EMV-PFM, there is no need to additionally install a DIN rail/bus bar above the cable entry, which would otherwise have to be attached in order to implement the EMC connection.

Slide frames which are no longer required are closed with BPK-SNAP blank plates

KDR-ESR-HW
Enclosure Gland Plate with Slide Frames for Häwa Enclosures

IP54 | HL3 EN 45545-2 | RoHS compliant | Made in Germany

Type	Enclosure width	Total length gland plate	Sight size of base plate opening	No. of possible cable entries				Order No.
				JUMBO 1	JUMBO 2	KEL(-U) 16|...	KEL(-U) 24|...	
KDR-ESR HW for Häwa enclosures series H395 and series H390								
KDR-ESR HW-600 + 1 blank plate	600 mm	427 mm	392 mm	–	–	–	2	44520
KDR-ESR HW-800 + 1 blank plate	800 mm	627 mm	592 mm	–	–	–	3	44521
KDR-ESR HW-800	800 mm	627 mm	592 mm	1	–	–	2	44522
KDR-ESR HW-1000 + 1 blank plate	1000 mm	827 mm	792 mm	–	–	–	4	44523
KDR-ESR HW-1200 + 1 blank plate	1200 mm	1027 mm	992 mm	–	–	–	5	44524
KDR-ESR HW-1200	1200 mm	1027 mm	992 mm	1	–	–	4	44525
KDR-ESR HW-1200	1200 mm	1027 mm	992 mm	–	1	–	4	44526

Sealing tape
Order No. 42999 (L: 1 m)
Order No. 42999.10000 (L: 10 m)

icotek can also produce enclosure gland plates for numerous other enclosure brands and in other sizes according to your wishes. Ask us at pm@icotek.com!

KDR 2-VX25 | KDR 2-TS8
Split Rittal Enclosure Gland Plates

IP54 RoHS compliant Made in Germany

Split, 2-part gland plates KDR 2 with pre-cut holes for KEL and KEL-JUMBO cable entry systems.

Integrated screw holes provide quick and easy installation of KEL frames.

Advantages & Benefits

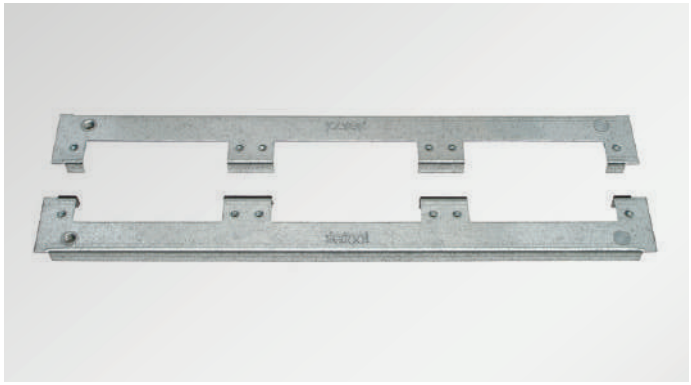
- During assembly, almost the complete base of the enclosure can be used for installation of cables
- Even large connectors can be installed easily
- The gland plate KDR 2 is designed for Rittal enclosures TS 8 & VX25. Other sizes can be supplied on request
- Retrofitting is possible without disconnecting of cables. All can be installed around the cables.
- No additional sheet metal work required
- Cut-outs, which are no longer required, are covered with metal blank plates Type BPM

Specifications

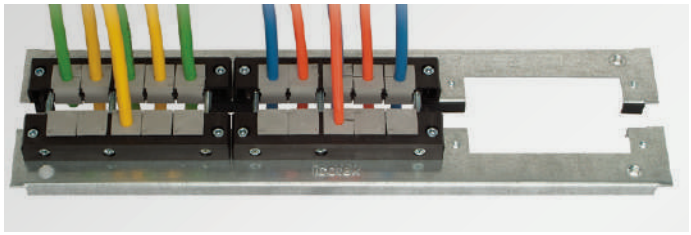
Material	Sheet steel, zinc-plated

Compatible with

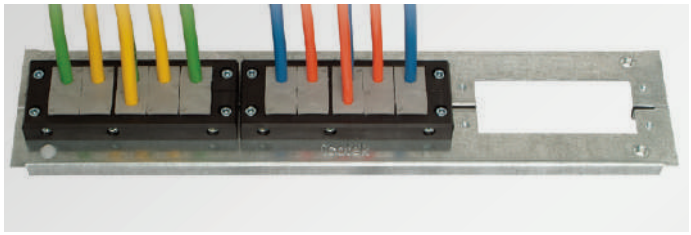
KEL 24 Cable entry frames	29
KEL-JUMBO Cable entry frames	58 - 59
BPM Blank plates metal	342



KDR 2 Assembly

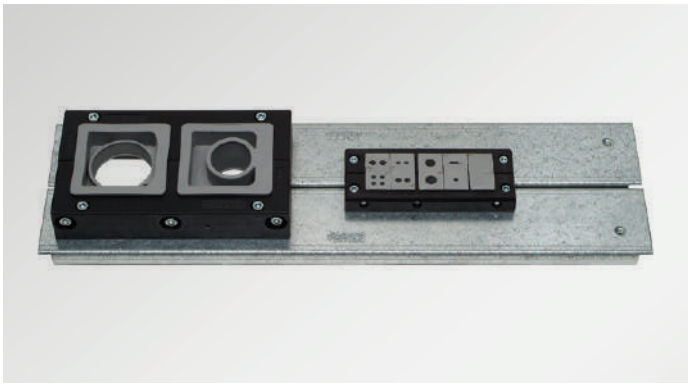


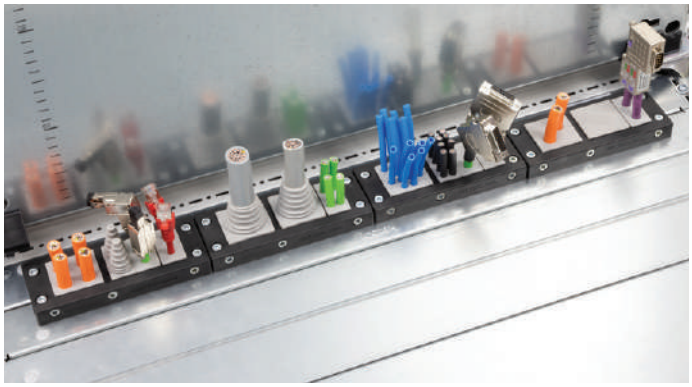
When the cable entry frames are assembled, the KDR gland plates move together for a tight, secure hold of the cable entry systems.



The frame parts with grommets have to be built up before final assembly, i.e. before screwing the system together.

Screwing of the cable entry frames tightens both parts of the split gland plate.

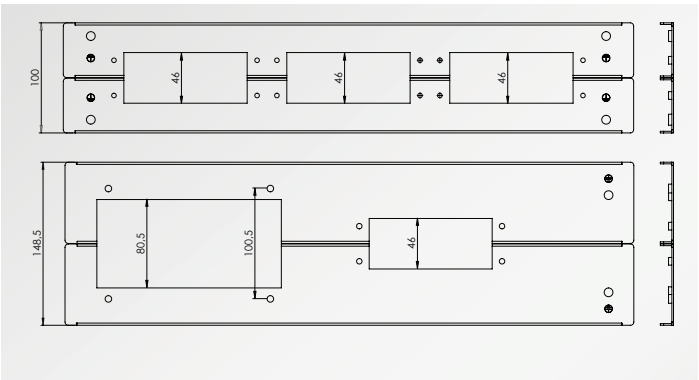




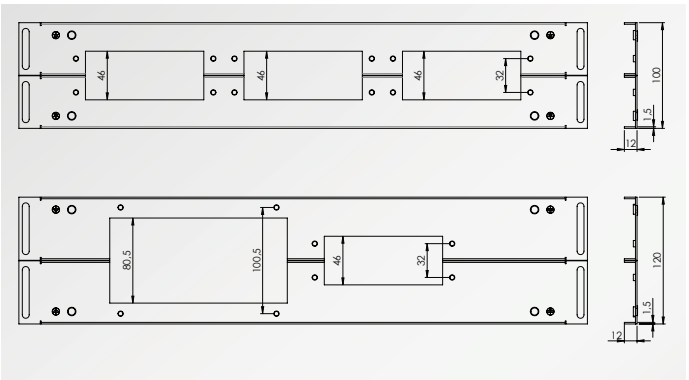
KDR 2-VX25 | KDR 2-TS8
Split Rittal Enclosure Gland Plates

IP54 RoHS compliant Made in Germany

Type	Enclosure width	Total length gland plate	Sight size of base plate opening	No. of possible cable entries			Order No.
				JUMBO 1	JUMBO 2	KEL 24|...	
KDR 2 for Rittal VX25:							
KDR 2-VX25-600	600 mm / 23.622 "	488 mm / 19.213 "	452 mm / 17.795 "	–	–	3	44400
KDR 2-VX25-600	600 mm / 23.622 "	488 mm / 19.213 "	452 mm / 17.795 "	1	–	2	44401
KDR 2-VX25-600	600 mm / 23.622 "	488 mm / 19.213 "	452 mm / 17.795 "	–	1	1	44402
KDR 2-VX25-800	800 mm / 31.496 "	688 mm / 27.087 "	652 mm / 25.669 "	–	–	4	44403
KDR 2-VX25-800	800 mm / 31.496 "	688 mm / 27.087 "	652 mm / 25.669 "	1	–	3	44404
KDR 2-VX25-800	800 mm / 31.496 "	688 mm / 27.087 "	652 mm / 25.669 "	–	1	2	44405
KDR 2-VX25-1000	1000 mm* / 39.37 " with division bar	438 mm / 17.244 "	402 mm / 15,827 "	–	–	2	44406
KDR 2-VX25-1000	1000 mm* / 39.37 " with division bar	438 mm / 17.244 "	402 mm / 15,827 "	1	–	1	44407
KDR 2-VX25-1000	1000 mm* / 39.37 " with division bar	438 mm / 17.244 "	402 mm / 15,827 "	–	1	1	44408
KDR 2-VX25-1200	1200 mm* / 47.244 "	538 mm / 21.181 "	502 mm / 19,764 "	–	–	3	44409
KDR 2-VX25-1200	1200 mm* / 47.244 "	538 mm / 21.181 "	502 mm / 19,764 "	1	–	2	44410
KDR 2-VX25-1200	1200 mm* / 47.244 "	538 mm / 21.181 "	502 mm / 19,764 "	–	1	1	44411
KDR 2 for Rittal TS 8:							
KDR 2-TS8-600	600 mm / 23.622 "	458 mm / 18.031 "	435 mm / 17.126 "	–	–	3	42924
KDR 2-TS8-800	800 mm / 31.496 "	658 mm / 29.056 "	635 mm / 25 "	–	–	4	42922
KDR 2-TS8-1000	1000 mm* / 39.37 " with division bar	420 mm / 16.535 "	398 mm / 15.669 "	–	–	2	42958
KDR 2-TS8-1200	1200 mm* / 47.244 "	518 mm / 29.394 "	495 mm / 19,488 "	–	–	3	42920
KDR 2-TS8-1200	1200 mm* / 47.244 "	518 mm / 29.394 "	495 mm / 19,488 "	1	–	2	42956



KDR 2-TS8 for Rittal TS 8



KDR 2-VX25 for Rittal VX25

* in case both fields of the control panel are equipped, 2 complete split gland plates are necessary.

MP
Module Plates

IP54 RoHS compliant Made in Germany

The module plates have cut-outs for fixing the KEL range cable entry systems KEL-FA 24 , KEL 24, KEL-U 24, KEL-QUICK 24, KEL-JUMBO, KEL-DPF, KEL-JUMBO flex and KEL-ULTRA flex.

The module plates can be installed on:
- Separation walls by Rittal
- closed enclosure bases and roofs (various manufacturers)
- Bases of Lohmeier enclosures
- Bases of Rittal enclosures via KDR-BMP gland plates

The module blank plate without cut-outs (Order No. 43882) is designed for closing unused cut-outs. This module plate can even be used for self-made cut-outs.

Module plates are supplied with a gasket.

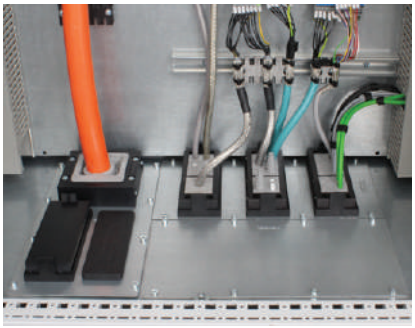
Specifications

Material	Sheet steel, zinc-plated
	* Aluminium (Order No. 43883, 43899)
Dimension	338 × 168 × 2 mm

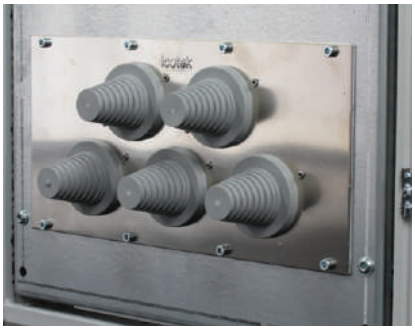
Compatible with

KEL-FA 24 Cable entry frames	25
KEL 24 Cable entry frames	29
KEL-U 24 Cable entry frames	21
KEL-QUICK 24 Cable entry frames	108
KEL-SNAP snap frames	56 - 57
KEL-JUMBO Cable entry frames	58 - 59
KEL-DPF Cable entry grommets	190 - 191
KEL-JUMBO flex Cable entry ins.	195
KEL-ULTRA flex Cable entry ins.	194
KEL-DPR	166 - 167
Blank plates	342 - 344

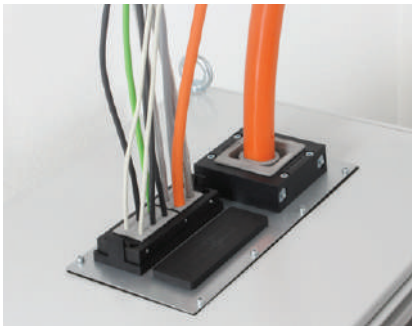
MP Applications



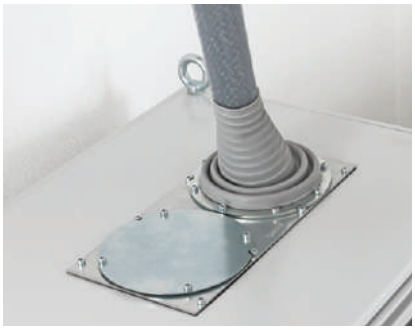
Cable routing via module plates in the base of a Rittal TS8 enclosure. Mounting with icotek gland plate KDR BMP.



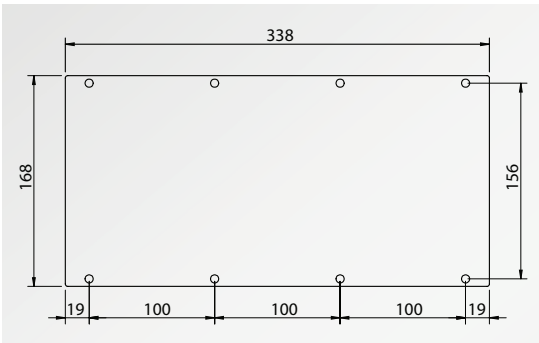
Cable routing through the divider panel of a Rittal TS8 baying enclosure system via module plates.



Routing of several cables with and without connectors through a closed enclosure roof via module plates. Cut-out size 314 x 144 mm.

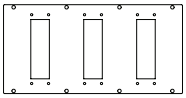
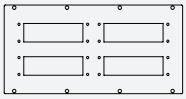
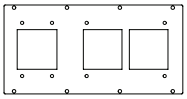
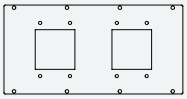
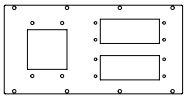
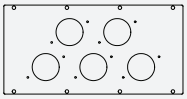
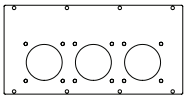
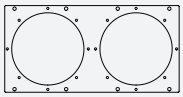
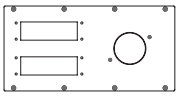
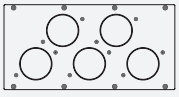


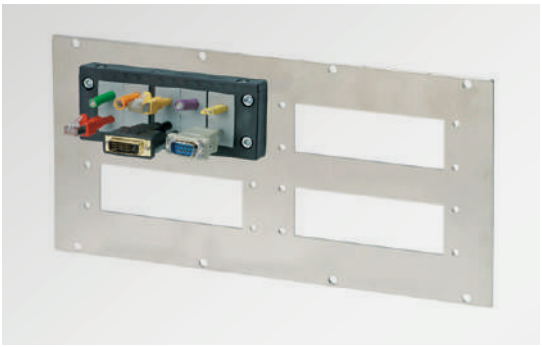
Routing of a rigid supply line through a closed enclosure roof via module plates. Cut-out size 314 x 144 mm.

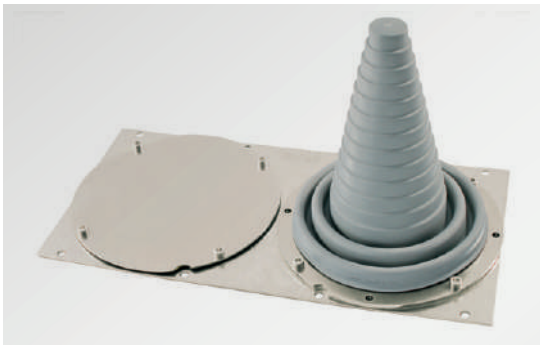


MP
Module Plates

IP54 RoHS compliant Made in Germany

Description	Type	Order No.	Compatible with
	MP 0	43882	Module plate, blank
	MP 1	43891	3× KEL(-FA/-U/-QUICK) 24|x
	MP 2	43890	4× KEL(-FA/-U/-QUICK) 24|x
	MP 3	43886	1× KEL-JUMBO 1 1× KEL-JUMBO 2
	MP 4	43888	2× KEL-JUMBO 1
	MP 5	43887	2× KEL(-FA/-U/-QUICK) 24|x 1× KEL-JUMBO 1
	MP 6 *	43883	5× cut-out M50 for KEL-DPF or KEL-DPZ
	MP 7	43889	Cut-out 3× KEL-JUMBO flex
	MP 8	43894	Cut-out 2× KEL-ULTRA flex
	MP 10	43896	2× KEL(-FA/-U/-QUICK) 24|x 1× cut-out M63 for KEL-DPF or KEL-DPZ
	MP 11 *	43899	5× cut-out M63 for KEL-DPF or KEL-DPZ





KDR-BMP for VX25
Enclosure Gland Plates for Module Plates

IP54 RoHS compliant Made in Germany

The KDR-BMP gland plates are ideally suited for Rittal VX25 enclosures and can be used instead of the 3 piece standard gland plates. The KDR-BMP gland plates are fixed by screwing.

On KDR-BMP gland plates, our MP Module Plates MP0-MP11 can be easily mounted and used for installation of cable entry components.

Note: The division bar can be removed in Rittal enclosures.

Advantages & Benefits

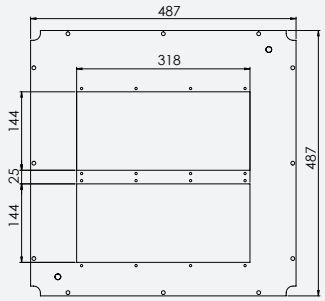
- Very simple mounting
- No sheet metal work required

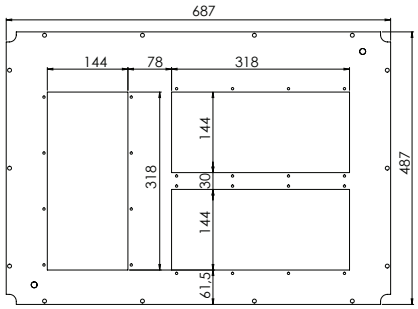
Specifications

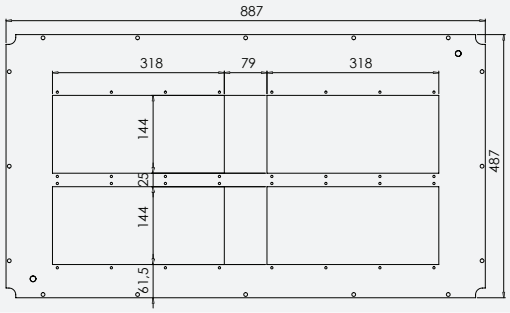
Material	Sheet steel, zinc-plated
IP rating	IP54, with gasket and correctselection of cable entry devices

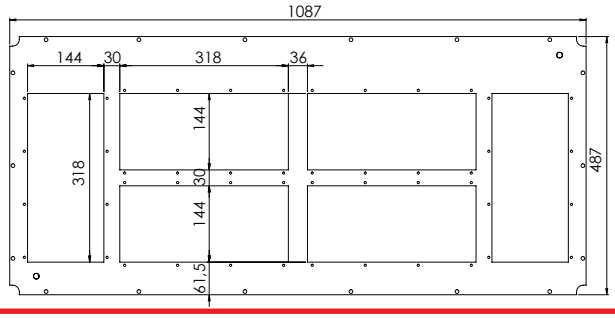
Compatible with

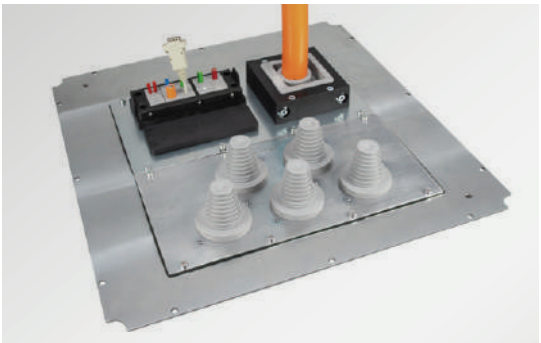
MP Module plates 326 - 327

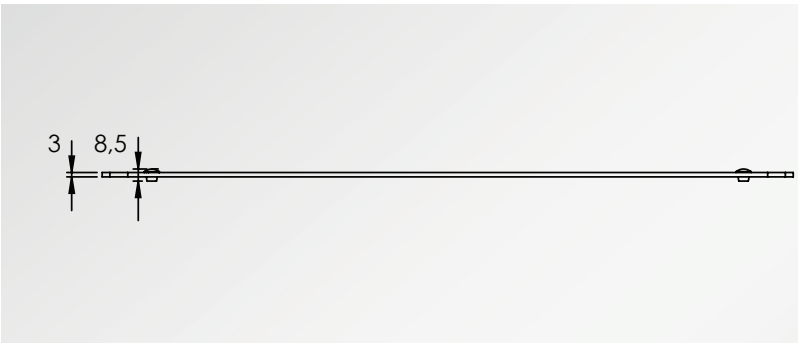












KDR-BMP for VX25
Enclosure Gland Plates for Module Plates

IP54 RoHS compliant Made in Germany

Type	Enclosure type	Enclosure width	Enclosure depth	No. of cut-outs for module plates	Order No.
KDR-BMP 600/600	VX25	600 mm / 23.622 "	600 mm / 23.622 "	2	43334
KDR-BMP 800/600	VX25	800 mm / 31.496 "	600 mm / 23.622 "	3	43340
KDR-BMP 1000/600	VX25	1000 mm / 39.37 " without division bar	600 mm / 23.622 "	4	43346
KDR-BMP 1200/600	VX25	1200 mm / 47.244 " without division bar	600 mm / 23.622 "	6	43352

KDR-BMP for TS8
Enclosure Gland Plates for Module Plates

IP54 RoHS compliant Made in Germany

The KDR-BMP gland plates are ideally suited for Rittal TS enclosures and can be used instead of the 3 piece standard gland plates.
Rittal standard mounting clips are used for fixing the plate.

On KDR-BMP gland plates, our MP Module Plates MP0-MP8 can be easily mounted and used for installation of cable entry components.

Advantages & benefits

- Very simple mounting
- No sheet metal work required

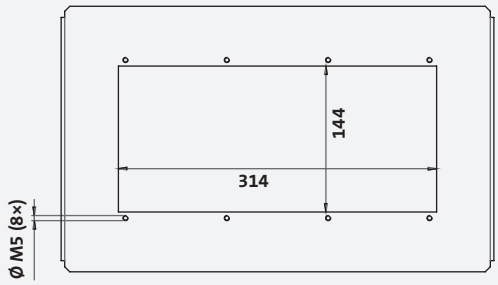
Specifications

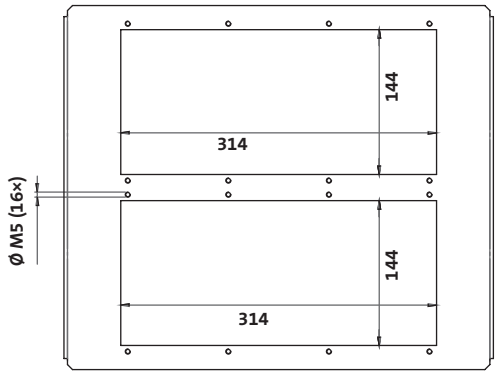
Material	Sheet steel, zinc-plated
IP rating	IP54, with gasket and correct selection of cable entry devices

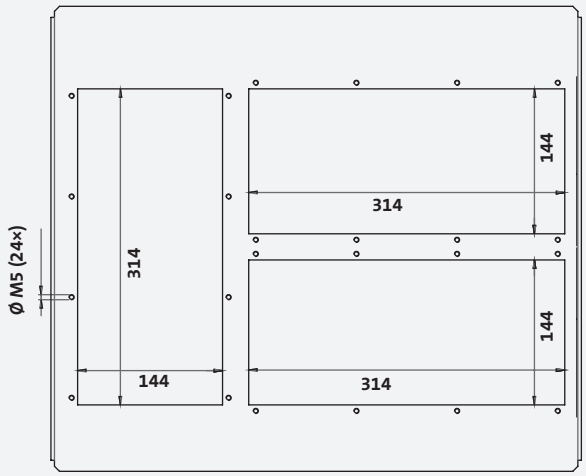
Compatible with

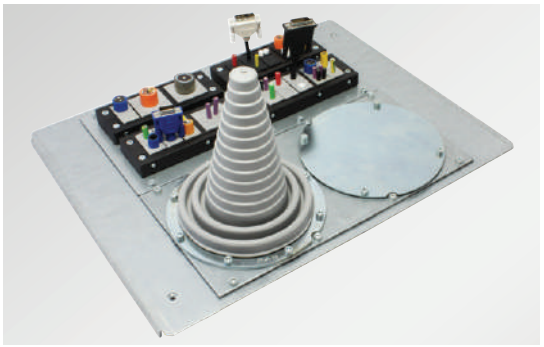
MP Module plates 326 - 327

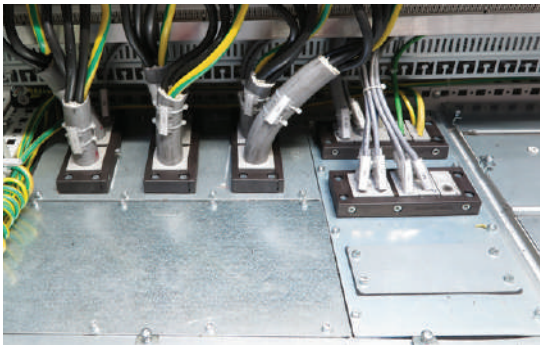
Description

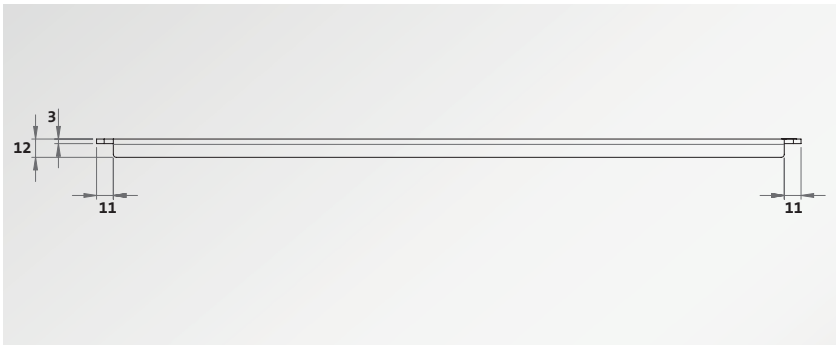












KDR-BMP for TS8
Enclosure Gland Plates for Module Plates

IP54 RoHS compliant Made in Germany

Type	Enclosure type	Enclosure width	Enclosure depth	No. of cut-outs for module plates	Order No.
KDR-BMP 600/400	TS 8	600 mm / 23.622 "	400 mm / 15.748 "	1	43300
KDR-BMP 600/500	TS 8	600 mm / 23.622 "	500 mm / 19,685 "	2	43302
KDR-BMP 600/600	TS 8	600 mm / 23.622 "	600 mm / 23.622 "	2	43304
KDR-BMP 800/600	TS 8	800 mm / 31.496 "	600 mm / 23.622 "	3	43310
KDR-BMP 1000/600	TS 8	1000 mm / 39.37 " with division bar	600 mm / 23.622 "	2	43316
KDR-BMP 1200/600 for left section	TS 8	1200 mm / 47.244 " with division bar	600 mm / 23.622 "	3	43322
KDR-BMP 1200/600 for right section	TS 8	1200 mm / 47.244 " with division bar	600 mm / 23.622 "	3	43324

FP-AX
Flange Plates
for Compact Enclosures

IP66 RoHS compliant Made in Germany

We supply complete flange plates FP with 112 × 36 mm cut-outs for compact enclosures of the AX series. The cut-outs, as well as the drilling template, conform to the standard cut-outs for 24-pole industrial connectors.

All flange plates are RAL 7035 powder-coated. Please use the gaskets of the standard plates. Enclosures are supplied with gaskets and screws.

We recommend fastening the cable entry systems with a torque of 1.5 - 2.0 Nm.

Advantages & benefits

- No expensive extra sheet metal work is required
- High cable density is achieved by using KEL-FA, KEL, KEL-U, KEL-QUICK, KEL-DPU, KEL-DPR, KEL-DPZ or KEL-DP
- Reduce labour costs by using cable entry systems compared to the assembly of conventional cable glands

Specifications

Material	Sheet steel, powder coated

Compatible with

KEL-FA Cable entry frames	24 - 27
KEL Cable entry frames	28 - 37
KEL-U Cable entry frames	20 - 22
KEL-QUICK Cable entry frames	107 - 109
KEL-SNAP Mounting frames	56 - 57
KEL-QTA 24 Cable entry frames	116 - 117
KEL-DPU 24 Cable entry plates	147 - 149
KEL-DPZ 24 Cable entry plates	153 - 154
KEL-DPR Cable entry plates	166 - 167
KEL-DP 24 Cable entry plates	169
KEL-BES	366
KEL-BES-S	367
Blank plates	342 - 344

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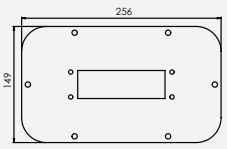
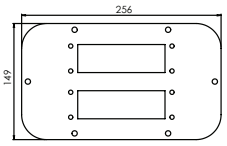
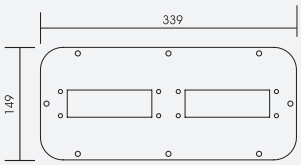
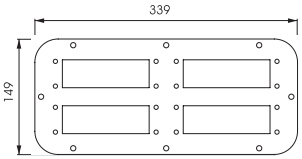
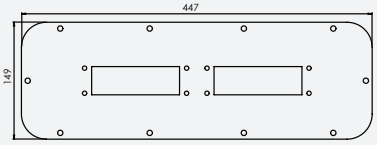
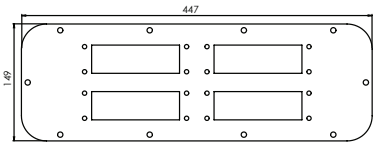
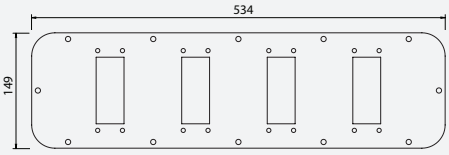
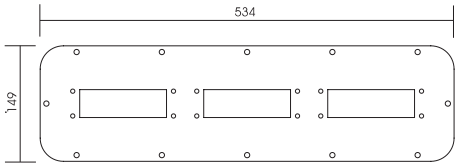
	
	
	
	
	
	
	
	

icotek also offers enclosure gland plates with brush strips, see pages 376 – 377.
Contact us at pm@icotek.com

FP-AX
Flange Plates
for Compact Enclosures

IP66 RoHS compliant Made in Germany

Type	Order No. RAL 7035	Compatible with: (Product Group 1)	Compatible with: (Product Group 2)	Size FP	Compatible with
FP-AX 256|149 with 1 cut-out 36 x 112 mm / 1.417 x 4.409" horizontal	43901	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	1	AX 1033.000 AX 1034.000
FP-AX 256|149 with 2 cut-outs 36 x 112 mm / 1.417 x 4.409" horizontal	43902	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	1	AX 1033.000 AX 1034.000
FP-AX|AE 339|149 with 2 cut-outs 36 x 112 mm / 1.417 x 4.409"	43840	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	2	AX 1031.000 AX 1380.000 AX 1038.000 AX 1077.000 AX 1100.000 AX 1045.000
FP-AX|AE 339|149 with 4 cut-outs 36 x 112 mm / 1.417 x 4.409"	43846	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	2	AX 1031.000 AX 1380.000 AX 1038.000 AX 1077.000 AX 1100.000 AX 1045.000
FP-AX 447|149 with 2 cut-outs 36 x 112 mm / 1.417 x 4.409" horizontal	43903	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	3	AX 1050.000 AX 1057.000
FP-AX 447|149 with 4 cut-outs 36 x 112 mm / 1.417 x 4.409" horizontal	43904	KEL 24 | KEL-U 24 KEL-QUICK 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	3	AX 1050.000 AX 1057.000
FP-AX|AE 534|149 with 4 cut-outs 36 x 86 mm / 1.417 x 3.386"	43871	KEL 16 | KEL-U 16 KEL-FA 16 KEL-QUICK 16 KEL-SNAP 16 KEL-BES 16 KEL-BES-S 16	KEL-DPZ 16 KEL-DP 16	4	AX 1039.000 AX 1060.000 AX 1054.000 AX 1076.000 AX 1058.000 AX 1090.000
FP-AX|AE 534|149 with 3 cut-outs 36 x 112 mm / 1.417 x 4.409"	43842	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	4	AX 1039.000 AX 1060.000 AX 1054.000 AX 1076.000 AX 1058.000 AX 1090.000

FP-AX
Flange Plates
for Compact Enclosures

IP66 RoHS compliant Made in Germany

We supply complete flange plates FP with 112 × 36 mm cut-outs for compact enclosures of the AX series. The cut-outs, as well as the drilling template, conform to the standard cut-outs for 24-pole industrial connectors.

All flange plates are RAL 7035 powder-coated. Please use the gaskets of the standard plates. Enclosures are supplied with gaskets and screws.

We recommend fastening the cable entry systems with a torque of 1.5 - 2.0 Nm.

Advantages & benefits

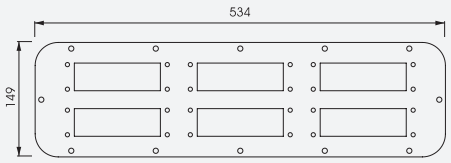
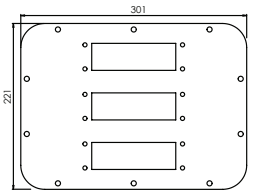
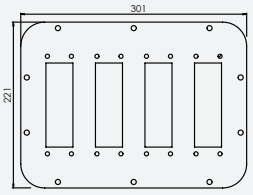
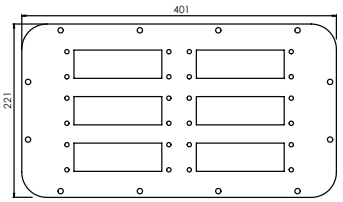
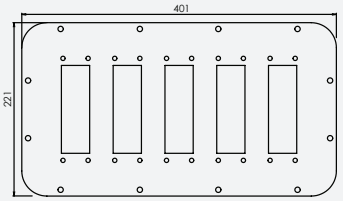
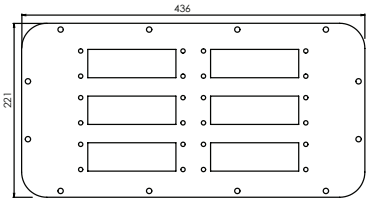
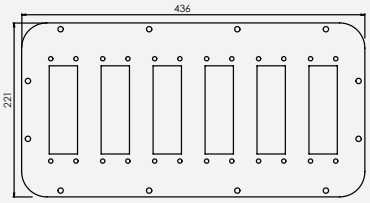
- No expensive extra sheet metal work is required
- High cable density is achieved by using KEL-FA, KEL, KEL-U, KEL-QUICK, KEL-DPU, KEL-DPZ or KEL-DP
- Reduce labour costs by using cable entry systems compared to the assembly of conventional cable glands

Specifications

Material	Sheet steel, powder coated

Compatible with

KEL-FA Cable entry frames	24 - 27
KEL Cable entry frames	28 - 37
KEL-U Cable entry frames	20 - 22
KEL-QUICK Cable entry frames	107 - 109
KEL-SNAP Mounting frames	56 - 57
KEL-QTA 24 Cable entry frames	116 - 117
KEL-DPU 24 Cable entry plates	147 - 149
KEL-DPZ 24 Cable entry plates	153 - 154
KEL-DPR 24 Cable entry plates	166 - 167
KEL-DP 24 Cable entry plates	169
KEL-BES	366
KEL-BES-S	367
Blank plates	342 - 343

Description








icotek also offers enclosure gland plates with brush strips, see pages 376 – 377.
Contact us at pm@icotek.com

FP-AX
Flange Plates
for Compact Enclosures

IP66 RoHS compliant Made in Germany

Type	Order No. RAL 7035	Compatible with: (Product Group 1)	Compatible with: (Product Group 2)	Size FP	Compatible with
FP-AX|AE 534|149 with 6 cut-outs 36 x 112 mm / 1.417 x 4.409"	43848	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	4	AX 1039.000 AX 1060.000 AX 1054.000 AX 1076.000 AX 1058.000 AX 1090.000
FP-AX 301|221 with 3 cut-outs 36 x 112 mm / 1.417 x 4.409" horizontal, 3 rows	43905	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	5	AX 1338.000 AX 1037.000 AX 1073.000 AX 1055.000 AX 1180.000 AX 1280.000 AX 1181.000 AX 1281.000
FP-AX 301|221 with 4 cut-outs 36 x 112 mm / 1.417 x 4.409" vertical, 1 row	43906	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	5	AX 1338.000 AX 1037.000 AX 1073.000 AX 1055.000 AX 1180.000 AX 1280.000 AX 1181.000 AX 1281.000
FP-AX 401|221 with 6 cut-outs 36 x 112 mm / 1.417 x 4.409" horizontal, 3 rows	43907	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	6	AX 1350.000 AX 1130.000 AX 1110.000 AX 1213.000 AX 1114.000 AX 1214.000 AX 1115.000
FP-AX 401|221 with 5 cut-outs 36 x 112 mm / 1.417 x 4.409" vertical, 1 row	43908	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	6	AX 1350.000 AX 1130.000 AX 1110.000 AX 1213.000 AX 1114.000 AX 1214.000 AX 1115.000
FP-AX 436|221 with 6 cut-outs 36 x 112 mm / 1.417 x 4.409" horizontal, 3 rows	43909	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	7	AX 1339.000 AX 1360.000 AX 1376.000 AX 1260.000 AX 1116.000 AX 1059.000 AX 1091.000 AX 1261.000
FP-AX 436|221 with 6 cut-outs 36 x 112 mm / 1.417 x 4.409" vertical, 1 row	43910	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	7	AX 1339.000 AX 1360.000 AX 1376.000 AX 1260.000 AX 1116.000 AX 1059.000 AX 1091.000 AX 1261.000

FP-KX/KL
Flange Plates for Junction Boxes

IP55 RoHS compliant Made in Germany

The FP flange plates type KX/KL, designed to fit the Rittal KX/KL series terminal boxes, are installed in combination with a cable entry system for either pre-terminated or standard cables. FP flange plates are pre-cut, pre-drilled and painted for easy and quick installation of icotek cable routing products.

We recommend fastening the cable entry systems with a torque of 1.5 – 2.0 Nm.

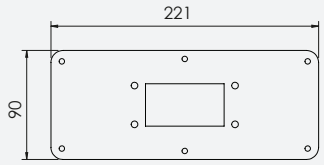
Specifications

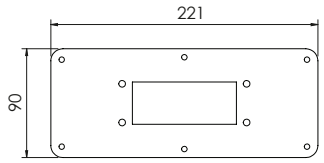
Material	Sheet steel, powder coated

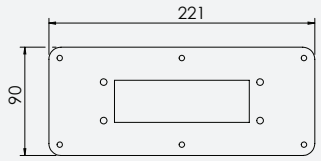
Compatible with

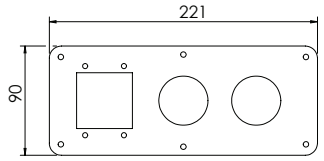
KEL-FA Cable entry frames	24 - 27
KEL Cable entry frames	28 - 37
KEL-U Cable entry frames	20 - 22
KEL-QUICK Cable entry frames	107 - 109
KEL-SNAP Mounting frames	56 - 57
KEL-QTA Cable entry frames	116 - 117
KEL-DPU Cable entry plates	146 - 149
KEL-DPZ Cable entry plates	152 - 159
KEL-DPR Cable entry plates	166 - 167
KEL-DP Cable entry plates	169
KEL-BES	366
KEL-BES-S	367
Blank plates	342 - 344

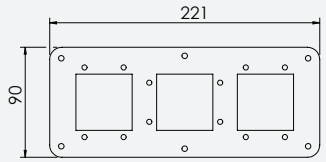
Description

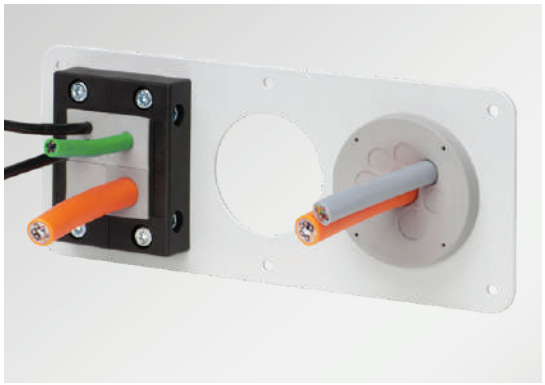












FP-KX/KL
Flange Plates for Junction Boxes

IP55 RoHS compliant Made in Germany

Type	Order No. RAL 7035	Flange plates compatible with	Size FP	Compatible with	
FP-KL 221x90|10 with 1 cut-out 36 x 65 mm / 1.417 x 2.56 "	43853	KEL 10 | KEL-U 10 KEL-FA 10 KEL-QUICK 10 KEL-SNAP 10 KEL-SNAP-S 10 KEL-DPZ 10 KEL-DP 10 KEL-BES(-S) 10	2	Junction boxes Type KL KX 1530.000 KX 1531.000 KX 1532.000 KX 1533.000 KX 1535.000	KX 1536.000 KX 1537.000 KX 1538.000 KX 1539.000 KX 1540.000 KX 1541.000
FP-KL 221x90|16 with 1 cut-out 36 x 86 mm / 1.417 x 3.386 "	43855	KEL 16 | KEL-U 16 KEL-FA 16 KEL-QUICK 16 KEL-SNAP 16 KEL-SNAP-S 16 KEL-DPZ 16 KEL-DP 16 KEL-BES(-S) 16	2	Junction boxes Type KL KX 1530.000 KX 1531.000 KX 1532.000 KX 1533.000 KX 1535.000	KX 1536.000 KX 1537.000 KX 1538.000 KX 1539.000 KX 1540.000 KX 1541.000
FP-KL 221x90|24 with 1 cut-out 36 x 112 mm / 1.417 x 4.409 "	43834	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-DPZ 24 KEL-DPU 24 KEL-DP 24 KEL-BES(-S) 24	2	Junction boxes Type KL KX 1530.000 KX 1531.000 KX 1532.000 KX 1533.000 KX 1535.000	KX 1536.000 KX 1537.000 KX 1538.000 KX 1539.000 KX 1540.000 KX 1541.000
FP-KL 221x90|A with 3 cut-outs	43852	KEL-B | KEL-U-B KEL-QUICK-B KEL-SNAP-B KEL-DPZ-B KEL-DPZ 40 KEL-DPF 40	2	Junction boxes Type KL KX 1530.000 KX 1531.000 KX 1532.000 KX 1533.000 KX 1535.000	KX 1536.000 KX 1537.000 KX 1538.000 KX 1539.000 KX 1540.000 KX 1541.000
FP-KL 221x90|C with 3 cut-outs 46 x 46 mm / 1.811 x 1.811 "	43856	KEL-B | KEL-U-B KEL-QUICK-B KEL-DPZ-B	2	Junction boxes Type KL KX 1530.000 KX 1531.000 KX 1532.000 KX 1533.000 KX 1535.000	KX 1536.000 KX 1537.000 KX 1538.000 KX 1539.000 KX 1540.000 KX 1541.000

IP65 cable entry plate for Rittal KX and KL:
KEL-DPZ-KX/KL pages 178 – 179

FP-AE
Flange Plates
for Compact Enclosures

IP66 RoHS compliant Made in Germany

We supply complete flange plates FP with 112 × 36 mm cut-outs for compact enclosures of the AE series. The cut-outs, as well as the drilling template, conform to the standard cut-outs for 24-pole industrial connectors.

All flange plates are RAL 7035 powder-coated. Please use the gaskets of the standard plates. Enclosures are supplied with gaskets and screws.

We recommend fastening the cable entry systems with a torque of 1.5 - 2.0 Nm.

Advantages & benefits

- No expensive extra sheet metal work is required
- High cable density is achieved by using KEL-FA, KEL, KEL-U, KEL-QUICK, KEL-DPU, KEL-DPZ or KEL-DP
- Reduce labour costs by using cable entry systems compared to the assembly of conventional cable glands

Specifications

Material	Sheet steel, powder coated

Compatible with

KEL-FA Cable entry frames	24 - 27
KEL Cable entry frames	28 - 37
KEL-U Cable entry frames	20 - 22
KEL-QUICK Cable entry frames	107 - 109
KEL-SNAP Mounting frames	57
KEL-QTA Cable entry frames	116 - 117
KEL-DPU Cable entry plates	146 - 149
KEL-DPZ Cable entry plates	152 - 159
KEL-DPR Cable entry plates	166 - 167
KEL-DP Cable entry plates	169
KEL-BES	366
KEL-BES-S	367
Blank plates	342 - 344

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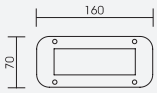
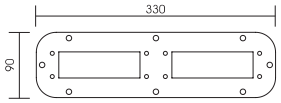
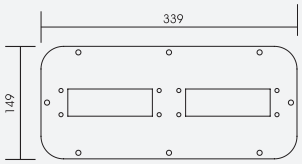
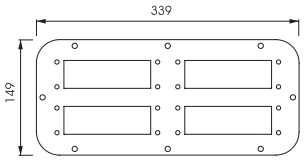
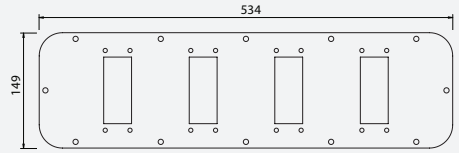
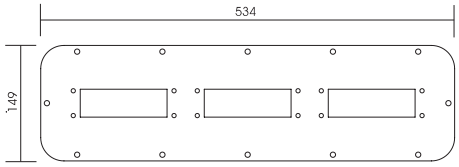
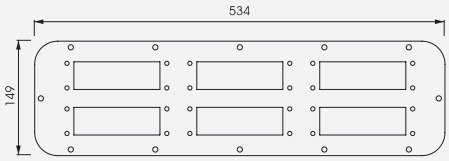








FP-AE
Flange Plates
for Compact Enclosures

IP66 RoHS compliant Made in Germany

Type	Order No. RAL 7035	Compatible with: (Product Group 1)	Compatible with: (Product Group 2)	Size FP	Compatible with
FP-AE 160|70 with 1 cut-out 36 x 112 mm / 1.417 x 4.409 "	43836	KEL-QTA 24	KEL-DP 24	1	AE 1032 AE 1035
FP-AE-24 330|90 with 2 cut-outs 36 x 112 mm / 1.417 x 4.409 "	43838	KEL 24 | KEL-U 24 KEL-QUICK 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	3	AE 1030 AE 1031 AE 1038 AE 1380
FP-AE-16 330|90 with 2 cut-outs 36 x 86 mm / 1.417 x 3.386 "	43861	KEL 16 | KEL-U 16 KEL-QUICK 16 KEL-BES 16 KEL-BES-S 16	KEL-DPZ 16 KEL-DP 16	3	
FP-AX|AE 339|149 with 2 cut-outs 36 x 112 mm / 1.417 x 4.409 "	43840	KEL 24 | KEL-U 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	4	AE 1037 AE 1045 AE 1050 AE 1057 AE 1100 AE 1110 AE 1114 AE 1130 AE 1213 AE 1338 AE 1350 CS 9751.125 CS 9751.145 CS 9751.165 CS 9752.125 TP 6710 TP 6712 TP 6714 TP 6716
FP-AX|AE 339|149 with 4 cut-outs 36 x 112 mm / 1.417 x 4.409 "	43846	KEL 24 | KEL-U 24 KEL-QUICK 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	4	
FP-AX|AE 534|149 with 4 cut-outs 36 x 86 mm / 1.417 x 3.386 "	43871	KEL 16 | KEL-U 16 KEL-QUICK 16 KEL-SNAP 16 KEL-BES 16 KEL-BES-S 16	KEL-DPZ 16 KEL-DP 16	5	AE 1039 AE 1054 AE 1055 AE 1058 AE 1060 AE 1073 AE 1076 AE 1077 AE 1090 AE 1180 AE 1260 AE 1280 AE 1339 AE 1360 AE 1376 AE 1958 EL 1919 EL 1926 IN 1076.290 TP 6711 TP 67113 TP 6715 TP 6717
FP-AX|AE 534|149 with 3 cut-outs 36 x 112 mm / 1.417 x 4.409 "	43842	KEL 24 | KEL-U 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	5	
FP-AX|AE 534|149 with 6 cut-outs 36 x 112 mm / 1.417 x 4.409 "	43848	KEL 24 | KEL-U 24 KEL-QUICK 24 KEL-QTA 24 KEL-BES 24 KEL-BES-S 24	KEL-DPZ 24 KEL-DPU 24 KEL-DP 24	5	

FP-BG | FP-FL21
Flange Plates for Bus Enclosures

IP54 RoHS compliant Made in Germany

The FP flange plates type BG, designed to fit the Rittal BG series enclosures, have up to 3 cut-outs that match the dimensions of the standard cut-outs for the 24-pole industrial connectors. These flange plates are installed in combination with a cable entry system for either pre-terminated cables (KEL-FA 24, KEL 24, KEL-U 24 or KEL-QUICK 24) or standard cables (KEL-DPZ 24, KEL-DPU 24 or KEL-DP 24).

We recommend fastening the cable entry systems with a torque of 1.5 – 2.0 Nm.

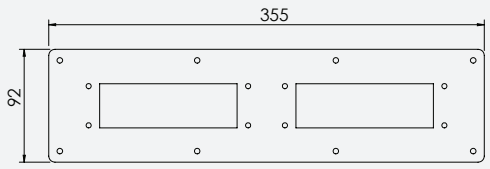
Specifications

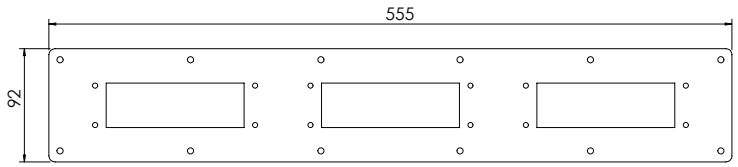
Material	Sheet steel, powder coated

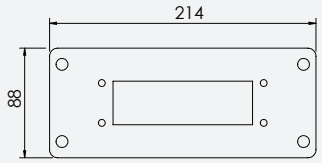
Compatible with

KEL-FA 24 Cable entry frames	29
KEL 24 Cable entry frames	25
KEL-U 24 Cable entry frames	21
KEL-QUICK 24 Cable entry frames	108
KEL-SNAP Mounting frames	57
KEL-QTA 24 Cable entry frames	116
KEL-DPU 24 Cable entry plates	147 - 149
KEL-DPZ 24 Cable entry plates	153 - 154
KEL-DPR Cable entry plates	166 - 167
KEL-DP 24 Cable entry plates	169
Blank plates	342 - 344

Description







FP-BG | FP-FL21
Flange Plates for Bus Enclosures

IP54 RoHS compliant Made in Germany

Type	Order No. RAL 7035	Flange plates compatible with	Size FP.	Compatible with
FP-BG 355x92 with 2 cut-outs 36 x 112 mm / 1.417 x 4.409 "	43866	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-DPZ 24 KEL-DPR 24 KEL-DPU 24 KEL-DP 24 KEL-BES(-S) 24	-	BG 1558.510
FP-BG 555x92 with 3 cut-outs 36 x 112 mm / 1.417 x 4.409 "	43865	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-DPZ 24 KEL-DPR 24 KEL-DPU 24 KEL-DP 24 KEL-BES(-S) 24	6	BG 1050.900 BG 1559.510 IN 1510.280
FP-FL 21 with 1 cut-out 36 x 112 mm / 1.417 x 4.409 "	43832	KEL 24 | KEL-U 24 KEL-FA 24 KEL-QUICK 24 KEL-SNAP 24 KEL-QTA 24 KEL-DPZ 24 KEL-DPR 24 KEL-DPU 24 KEL-DP 24 KEL-BES(-S) 24	-	Fibox plates

BPK
Plastic Blank Plates

BPK Blank plates seal cut-outs for standard 10-pole / 16-pole / 24-pole industrial connectors with IP rating up to IP64.

Plastic blank plates are available in two different versions:

Type BPK: Blank plates for screw connection
Type BPK-RF A: Blank plates for snapping into metal sheet plates up to a thickness from 1.5 to 3 mm

Advantages & benefits

- Fast mounting of the blank plates BPK-RF range by snapping into the cut-out
- Integrated circular sealing (up to IP66)

Specifications

Material	Polypropylene (PP) Circular sealing: Elastomer
Flame class	UL 94 V-0
IP rating	BPK: IP66 (certified acc. to EN 60529) BPK-RF A: IP54
Operating temperature	-30°C to +140°C (static -22°F to + 284°F (static)
Properties	Halogen free, silicone free

Compatible with

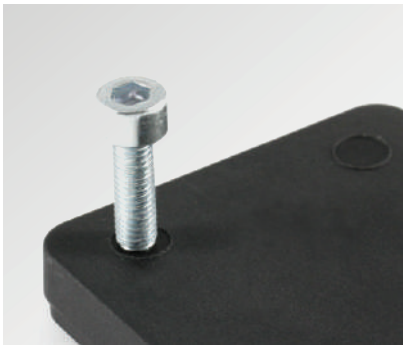
FP Flange plates 332 - 341

Type	Order No.	Blank plate for KEL cut-out	Dimensions	PU
BPK Blank plates for screw connection:				
BPK-B	42010	... -B	76 × 53 mm 2.992 x 2.087 "	10
BPK 10	42015	... 10	101 × 53 mm 3.976 x 2.087 "	10
BPK 16	42016	... 16	121 × 53 mm 4.764 x 2.087 "	10
BPK 24	42024	... 24 KEL-FG-ER A | KEL-FG-A	148 × 53 mm 5.827 x 2.087 "	10
BPK Blank plates for snapping into cut-outs:				
BPK-B-RF A	42010.002	... -B	76 × 53 mm 2.992 x 2.087 "	10
BPK 10-RF A	42015.002	... 10	101 × 53 mm 3.976 x 2.087 "	10
BPK 16-RF A	42016.002	... 16	121 × 53 mm 4.764 x 2.087 "	10
BPK 24-RF A	42024.002	... 24 KEL-FG-ER A | KEL-FG-A	148 × 53 mm 5.827 x 2.087 "	10
BPK-JFX	42620	KEL-JUMBO flex	88 × 88 mm 3.465 x 3.465 "	5

BPK

BPK-RF

BPK-RF: Snap function, tool-less assembly



BPK: screwable

BPM
Metal Blank Plates

IP66 RoHS compliant Made in Germany

Blank plates to close cut-outs for standard 6-pole/10-pole/16-pole/24-pole industrial connectors.

Blank plates are supplied with a gasket.

Specifications

Material	Steel, zinc-plated Width 2 mm
IP rating	IP66

Compatible with

KDR 2 Split gland plates	324 - 325
FP Flange plates	332 - 341
MP Module plates	326 - 327

Type	Order No.	Blank plate for KEL cut-out	Dimensions	PU
BPM-E2	42048	... -E2	73 × 39.5 mm 2.874 x 1.555 "	10
BPM-E3	42049	... -E3	98 × 39.5 mm 3.858 x 1.555 "	10
BPM-E4	42050	... -E4	120 × 39.5 mm 4.724 x 1.555 "	10
BPM-E5	42051	... -E5	147 × 39.5 mm 5.787 x 1.555 "	10
BPM-B BPM-B V2A	42013 41996	... -B	75 × 58 mm 2.953 x 2.283 "	10
BPM 6 BPM 6 V2A	42011 41991	... 6	90 × 52 mm 3.543 x 2.047 "	10
BPM 10 BPM 10 V2A	42014 41992	... 10	99 × 58 mm 3.898 x 2.283 "	10
BPM-FG-B	42012	KEL-FG-B	80 × 58 mm 3.15 x 2.283 "	10
BPM 16 BPM 16 V2A	42025 41994	... 16	118 × 56 mm 4.646 x 2.205 "	10
BPM 16-E	42023	KEL 16-E	120 x 87 mm 4.724 x 3.425 "	1
BPM 16-MT	42026	KEL 16-MT	120 x 102 mm 4.724 x 4.016 "	1
BPM 16-2MT	42031	KEL 16-2MT	120 x 146 mm 4.724 x 5.748 "	1
BPM 24 BPM 24 V2A	42027 41995	... 24	145 × 56 mm 5.709 x 2.205 "	10
BPM 24-E	42029	KEL 24-E	143 x 83 mm 5.63 x 3.268 "	1
BPM 24-MT	42028	KEL 24-MT	147 × 102 mm 5.787 x 3.268 "	1
BPM-JUMBO flex	42033	KEL-JUMBO flex	88 × 88 mm 3.465 x 3.465 "	1
BPM-JUMBO 1	42030	KEL-JUMBO 1	116 × 110 mm 4.567 x 4.331 "	1
BPM-JUMBO 2	42032	KEL-JUMBO 2	200 × 116 mm 7.874 x 4.567 "	1
BPM-ULTRA	42633	KEL-ULTRA flex	Ø 168 mm / 6.614 " Width: 1.5 mm / 0.059 "	1

BPK-SNAP
Blank Plates for KEL-SNAP Frames

IP54 RoHS compliant Made in Germany

Blank plate BPK-SNAP to close cut-outs of pre-assembled KEL-SNAP frames.

A snap frame can be closed, i.e. during transport to avoid entry of dust, as long as a KEL frame is not mounted.

The BPK-SNAP blank plate is simply snapped on the KEL frame. There is no tool needed to remove it.

BPK-SNAP 16 and BPK-SNAP 24 for closing cut-outs of the KEL-SNAP mounting frames and unused slide frames of the KDR-ESR gland plates.

Specifications

Material	Polyamide (PA)
Flame class	UL 94 V-0
IP rating	IP54
Operating	-40°C to +80°C (static)
temperature	- 40°F to + 176°F (static)
Properties	Halogen free, silicone free

Compatible with

KEL-SNAP Mounting frames	56 - 57
KDR-ESR Gland plate with Slide frames	316 - 319

Type	Order No.	Blank plate compatible with	Dimensions l × b × h	PU
BPK-SNAP-B	42003	KEL-SNAP-B4	58 × 72.8 × 17 mm 2.283 x 2.866 x 0.669"	10
BPK-SNAP 10	42004	KEL-SNAP 10	58 × 98.3 × 17 mm 2.283 x 3.87 x 0.669"	10
BPK-SNAP 16	42007	KEL-SNAP 16	58 × 120 × 17 mm 2.283 x 4.724 x 0.669"	10
BPK-SNAP 24	42017	KEL-SNAP 24	58 × 147 × 17 mm 2.283 x 5.787 x 0.669"	10
BPK-SNAP 24-E	42008	KEL-SNAP 24-E	83 × 147 × 17 mm 3.268 x 5.787 x 0.669"	10

Control Panel Construction

Control panel construction is required in numerous areas: from building technology and electrical engineering to industrial automation and energy distribution through to network technology. In these areas, electrical engineers are confronted with deadlines and cost pressure. High demands are placed on individual control panel solutions, short production time and high quality at low costs.

icotek offers highly efficient and cost-effective solutions for every control panel application in the fields of cable entry, cable management and EMC cable shielding.

1 **Cable entry frames and plates**
Product groups 1 and 2
Page 8 – 195

2 **Gland plates, flange plates, accessories**
Product group 6
Page 310 – 361

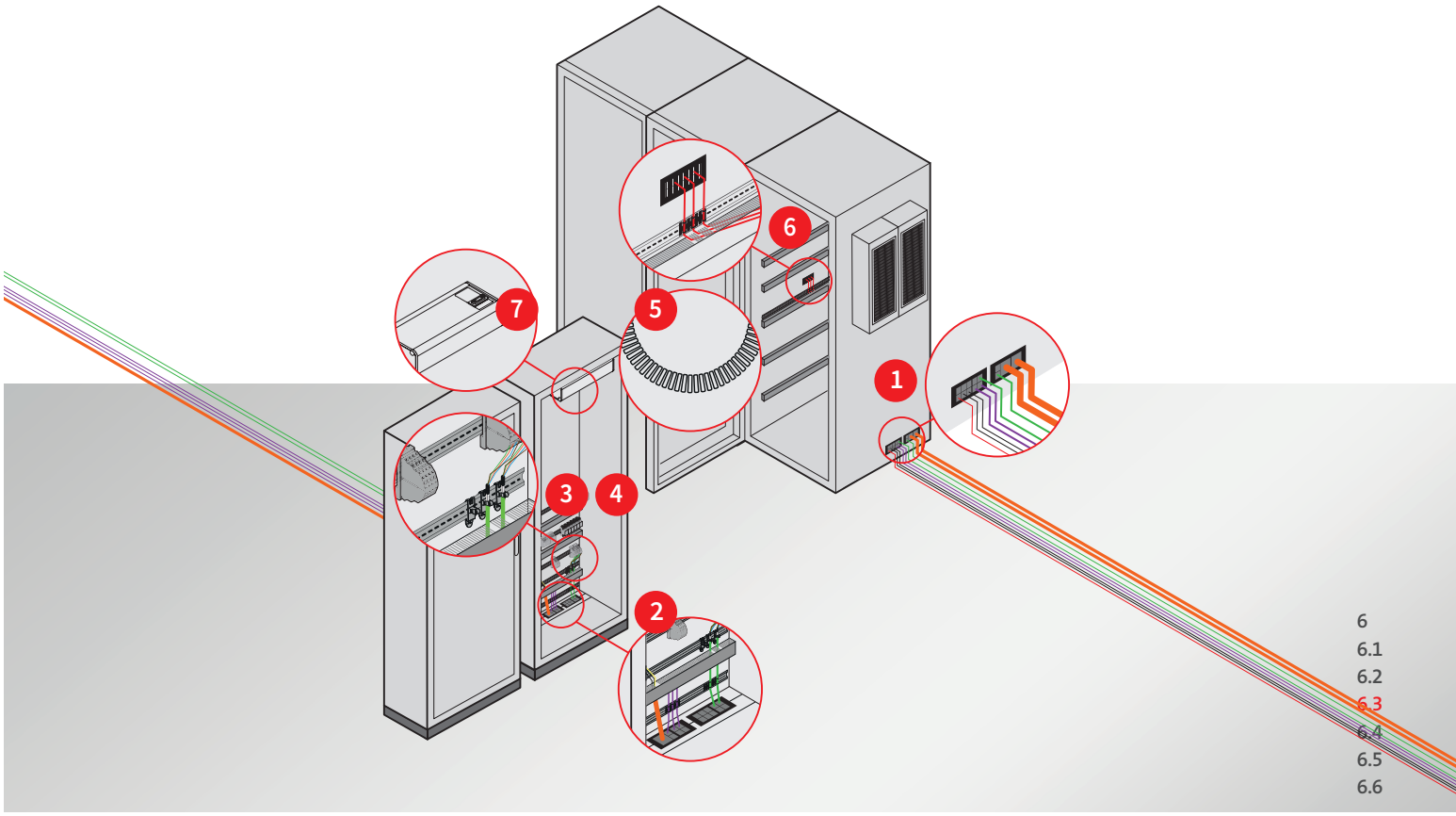
3 **Strain relief and cable routing**
Product group 3
Page 196 – 231

4 **EMC solutions**
Product group 4
Page 232 – 299

5 **CONFiX Cable conduit system**
Product group 5
Page 300 – 309

6 **Cable pass-through with brush seal**
Product group 7
Page 362 – 379

7 **ALLIOLiGHT**
Lighting systems for industry and automation

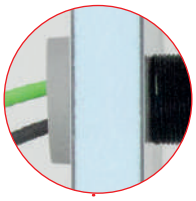


6.4 TE-M
Thread Extension
for Cable Glands and Cable Entry Plates

Fits to all round icotek cable glands and cable entry plates M25, M32, M50 and M63

IP protection of the cable gland or cable entry plate used remains in place

Indentation for wrench size for easy tightening of the screw connection



Especially suitable for sandwich panels of all wall thicknesses

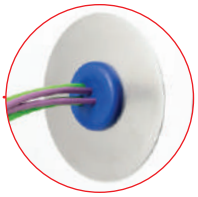
Almost endless extension possible

Different thread lengths can be flexibly combined with each other

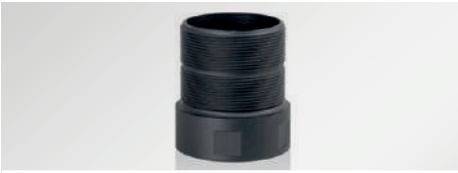
Larger lengths can be shortened at the notch between the threads, without damaging the threads

Available in sizes M25, M32, M50 and M63
Thread lenghts: 35 mm, 60 mm or 120 mm

Adapter for the screwing together of thread extensions of the same diameter in opposite directions



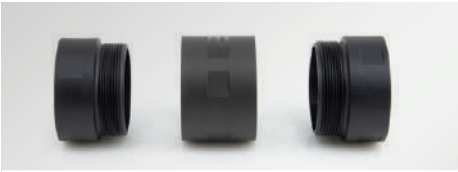
Cover panel to reduce large drill holes to the required size at the cut-out



Thread Extension
for Cable Glands and Cable Entry Plates
M25, M32, M50, M63

TE-M

348 – 349



Adapter
for Thread Extension
M32, M50, M63

TE-MA

350

Cover panel
for Thread Extension
M32, M50, M63

AB-M

351

Hexagonal Locknuts
M16 – M85

KGM / GM / GMT

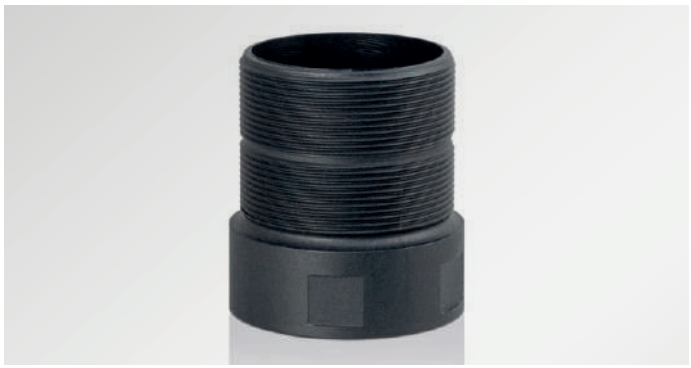
358

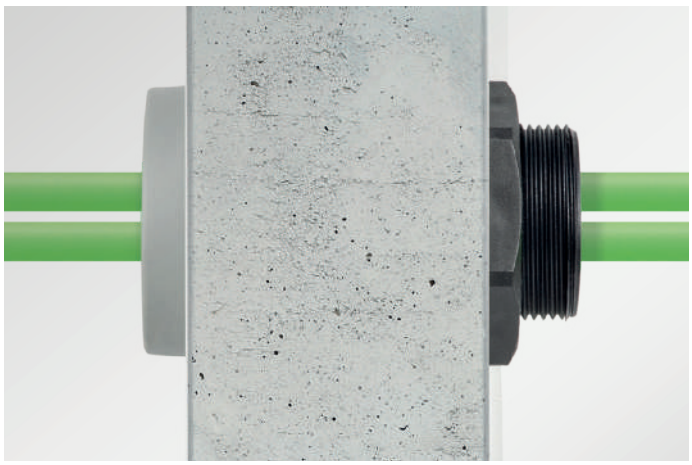
6
6.1
6.2
6.3
6.4
6.5
6.6

TE-M
Thread Extension
for Cable Glands and Cable Entry Plates

The icotek cable glands and cable entry plates with metric thread (pitch 1.5 mm) are screwed together with a locknut during assembly. If the thread lengths are not sufficient, for example when mounting on sandwich panels or thick concrete walls, icotek offers a practical solution: the icotek thread extension!

The icotek thread extension is available in four sizes (M25, M32, M50, M63) and in three lengths (35 mm, 60 mm, 120 mm) and represents a real innovation in the field of cable management. The different lengths can be flexibly combined or shortened at the designated points. This means that not only very large, but also dimensionally accurate distances can be overcome when routing the cable. Due to their stable construction, almost any number of thread extensions can be screwed together. If the cable gland is not supplied with a locknut, this must be ordered as well.





Advantages

- Wide range of applications in different industries such as construction, building services, caravans, cleanroom and more
- Especially suitable for sandwich panels of all wall thicknesses
- IP protection of the cable gland or cable entry plate used remains in place
- Almost endless extension possible
- Different thread lengths can be flexibly combined with each other
- Larger lengths can be shortened at the notch between the threads, without damaging the threads
- Indentation for wrench size for easy tightening of the screw connection
- Available in sizes M25, M32, M50 and M63
- Thread lenghts: 35 mm, 60 mm or 120 mm
- Fits to all round icotek cable glands and cable entry plates M25, M32, M50 and M63

Specifications

Material	Polyamide (PA)
Flame class	UL 94 V-0, self-extinguishing
Temperature	- 40°C to + 140°C (static)
Properties	Halogen free, silicone free
Cut-out sizes	30/37/55/68 mm (standard sizes for hole saws)

Accessories

TE-M	350
AB-M	351
KVT-ER	62 - 63
KVT	64 - 65
DB	72 - 73
KEL-DPZ	160 - 161
KEL-DPZ-HD	438 - 411
KEL-SCDP-TR	186 - 187
KEL-DPF	190 - 191
Locknut	358

Type		Thread	Length	External diameter	Wrench size	Order No.	PU
TE-M25|35	NEW	M25 x 1,5	35 mm	29,5 mm	SW 28	52316	5
TE-M25|60	NEW	M25 x 1,5	60 mm	29,5 mm	SW 28	52317	5
TE-M25|120	NEW	M25 x 1,5	120 mm	29,5 mm	SW 28	52318	5
TE-M32|35		M32 x 1,5	35 mm	36,5 mm	SW 35	52300	5
TE-M32|60		M32 x 1,5	60 mm	36,5 mm	SW 35	52301	5
TE-M32|120		M32 x 1,5	120 mm	36,5 mm	SW 35	52302	5
TE-M50|35		M50 x 1,5	35 mm	54,5 mm	SW 53	52310	5
TE-M50|60		M50 x 1,5	60 mm	54,5 mm	SW 53	52311	5
TE-M50|120		M50 x 1,5	120 mm	54,5 mm	SW 53	52312	5
TE-M 63|35		M63 x 1,5	35 mm	67,5 mm	SW 66	52313	5
TE-M 63|60		M63 x 1,5	60 mm	67,5 mm	SW 66	52314	5
TE-M 63|120		M63 x 1,5	120 mm	67,5 mm	SW 66	52315	5

RoHS compliant | Made in Germany

Adapter for TE-M

The TE-MA adapter is available as a supplement to the thread extensions, which can be joined together in almost any order. This allows thread extensions of the same diameter to be screwed together in opposite directions so that a cable gland or cable entry can be fitted on both sides. This enables routing and sealing on both sides of the wall.

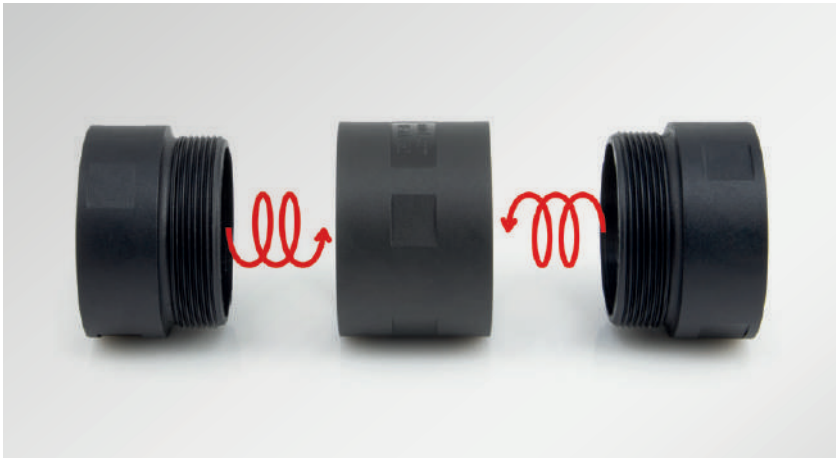
Advantages

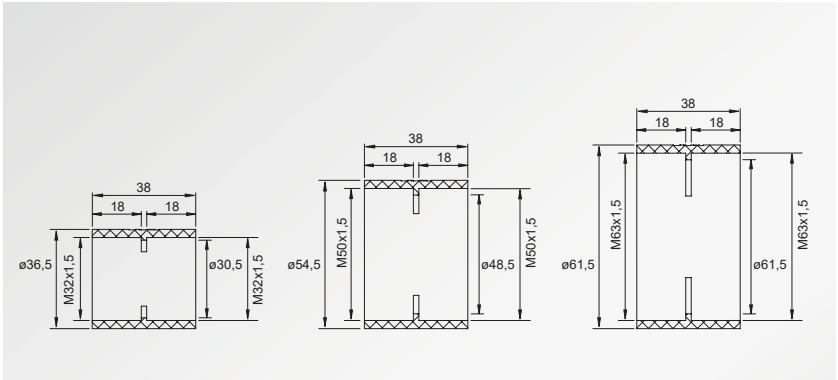
- Use of the thread extension on both sides
- IP protection of the cable gland and cable entry used remains intact
- Available in M32, M50 and M63
- Tool-less joining of two thread extensions

Specifications

Material	Polyamide (PA)
Flame class	UL 94 V-0, self-extinguishing
Temperature	-40°C to +140°C (static)
Properties	Halogen free, silicone free

Type	Thread	Outer diameter	Length	Compatible with	Order No.	PU
Adapter TE-MA 32	32 x 1,5 mm	36,5 mm	38 mm	TE-M32	52305	5
Adapter TE-MA 50	50 x 1,5 mm	54,5 mm	38 mm	TE-M50	52307	5
Adapter TE-MA 63	63 x 1,5 mm	67,5 mm	38 mm	TE-M63	52308	5





TE-MA 32 *TE-MA 50* *TE-MA 63*

RoHS compliant | Made in Germany

Cover Panel

Core drills with diameters from 80 mm are very often used to make wall openings in cleanrooms, cold storage rooms, buildings, etc. In order to be able to use the TE thread extension for such wall openings, the AB-M150 cover plates are used. They cover the large hole and reduce it to the required size. They also ensure a clean finish to the cut-out.

The cover panels have an outer diameter of 150 mm and a centre hole of 32.5 mm, 50.5 mm or 63.5 mm to accommodate the thread extension. They are made of 2 mm stainless steel and are bevelled on the outer radius to create a perfect transition to the wall.

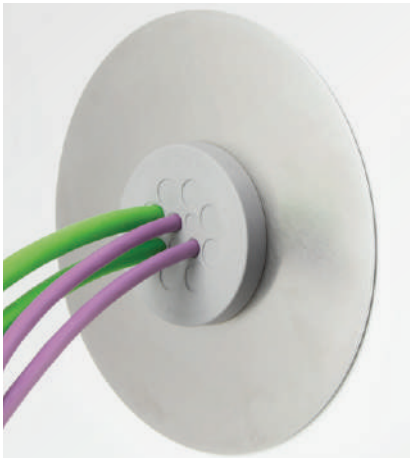
Advantages

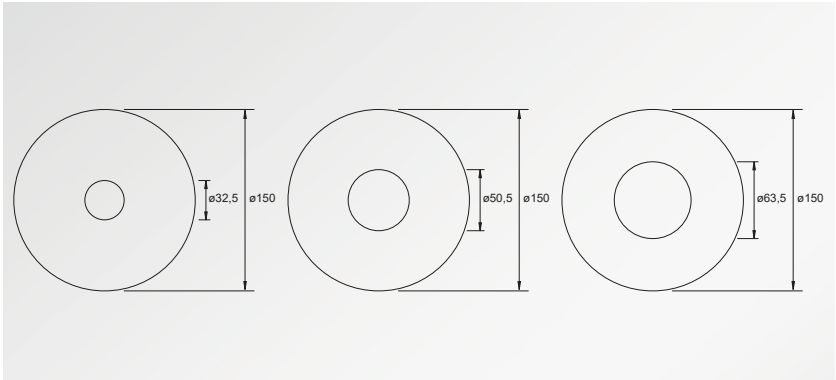
- Reduction of large drill holes to the required size at the cut-out
- Suitable for the TE-M32, TE-M50 and TE-M63
- For a clean finish at the cut-out
- Perfect transition to the wall thanks to the bevel on the outer edge
- Installation with silicone or mounting adhesive (without fixing holes for hygiene reasons)

Specifications

Material	Stainless steel
Material thickness	2 mm

Type	Inner diameter	Outer diameter	Material thickness	Compatible with	Order No.	PU
Cover panel AB-M 150-32	32,5 mm	150 mm	2 mm	TE-M32	52350	1
Cover panel AB-M 150-50	50,5 mm	150 mm	2 mm	TE-M50	52351	1
Cover panel AB-M 150-63	63,5 mm	150 mm	2 mm	TE-M63	52352	1





AB-M 150-32 *AB-M 150-50* *AB-M 150-63*

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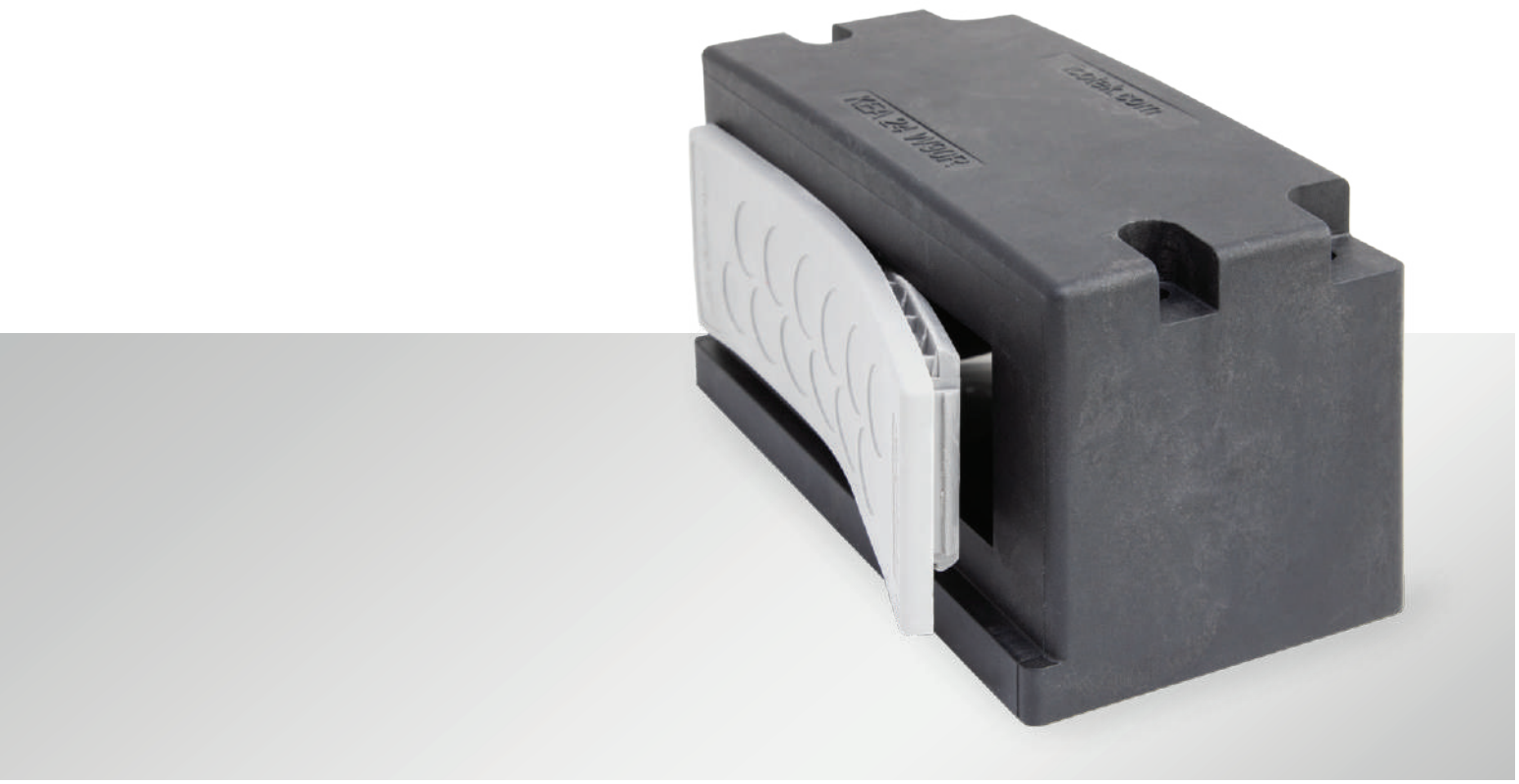
6.5 KEA
90° Cable Entry Adapter

The 90° Adapter for Cable Entries in Size 24

KEA 24 is a multifunctional adapter for various size 24 cable entry systems. Cables are routed through the adapter at a 90° angle.

The installation direction can be horizontal or vertical. The cables are protected against mechanical tension in the entry and exit areas.

A major advantage of the new adapter is that a very high packing density can be achieved in combination with the icotek cable entry plates.

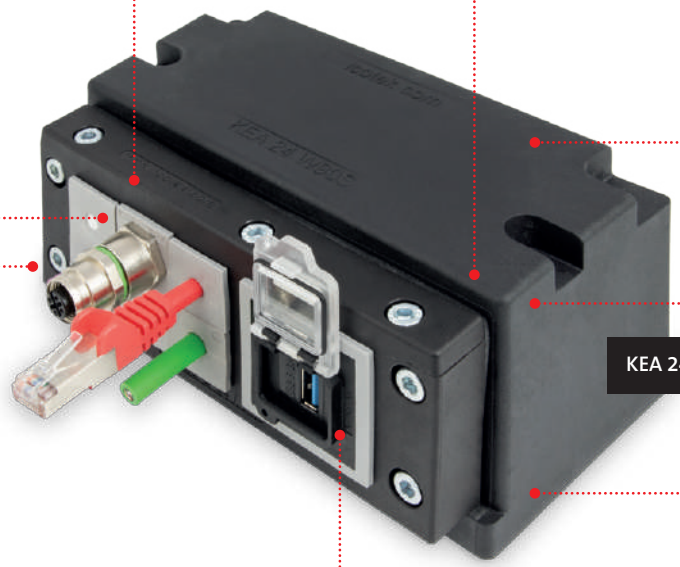


Quick and easy, partly tool-less (R variant) assembly

Easy snap-on assembly with KEL-DP 24 B (Variant R)

High packing density in combination with cable entry plates in size 24

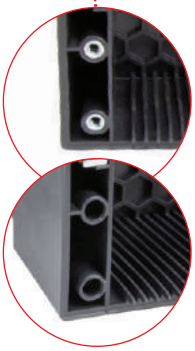
High stability due to the geometry of the housing



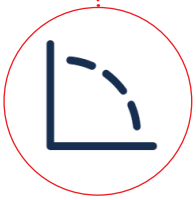
KEA 24 W90 S

Existing icotek products for cable entry can be used

Mechanical protection of the cables in the entry area



Wall mounting with threaded bushings or through bolts



Cable entry 90° to the housing

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KEA
90° Cable Entry Adapter

KEA 24 is a cable entry adapter for accommodating various icotek cable entry frames and plates of size 24. The adapter allows cables to be routed at a 90° angle. The installation direction can be horizontal or vertical. The cables are protected against mechanical tension in the entry and exit areas. Wall mounting is done either with screws and nuts or by using threaded bushings. A flat rubber gasket is included in the shipment. icotek also offers suitable punches for the cut-out.

The cable entry plates KEL-DP 24 Type B can be easily snapped onto the KEA 24 W90 R (UL TYPE 12). The cable entry frames KEL 24, KEL-U 24, KEL-ER 24, and the cable entry plates KEL-DPZ 24, KEL-DPR and KEL-DPU 24 can be screwed onto the KEA 24 W90 S (UL TYPE 12/TYPE 4X*). This enables the routing of cables with and without connectors.

Depending on the combination with an icotek cable entry system, the 90° adapter KEA achieves certified degrees of protection in accordance with EN 60529.

Advantages

- Allows the adaptation of cable entry plates at a 90° angle
- Quick and easy, partly tool-free (R variant) assembly
- High packing density in combination with cable entry plates (size 24)
- Mechanical protection at cable entry and exit due to the closed housing
- Universal 90° adapter for many icotek products in size 24
- Space saving within the control cabinet due to the bending radius being shifted outwards
- Edge protection

Specifications

Material	Polyamide (PA)
Colour	black (RAL 9005)
IP rating KEA + ...	KEL-ER 24: IP54, IP65 KEL-U 24: IP54 KEL 24: IP54 KEL-DPU 24: IP54, IP65 KEL-DPZ 24: IP54, IP65, IP66 KEL-DPR: IP54, IP65 KEL-DP 24 B: IP54
Flame class	UL 94 V-0, self-extinguishing
Temperature	- 40°C to + 120°C (static)
Properties	Halogen free, silicone free

Compatible with

KEL(-U, -ER) 24	21, 17
KEL-DPU 24, KEL-DPZ 24, KEL-DPR, KEL-DP 24 B	147 - 149, 153 - 154, 166 - 167, 169

Accessories

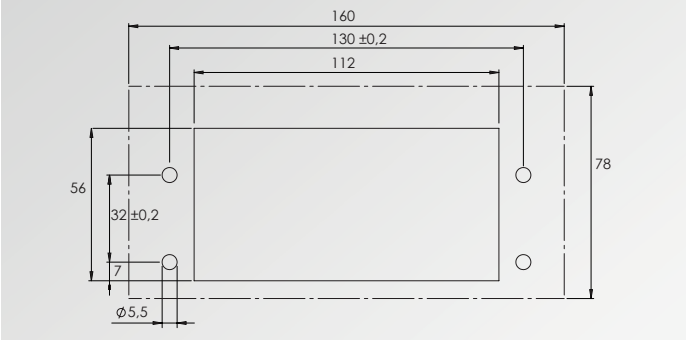
Punches	388 - 399

Compatible punches page 388

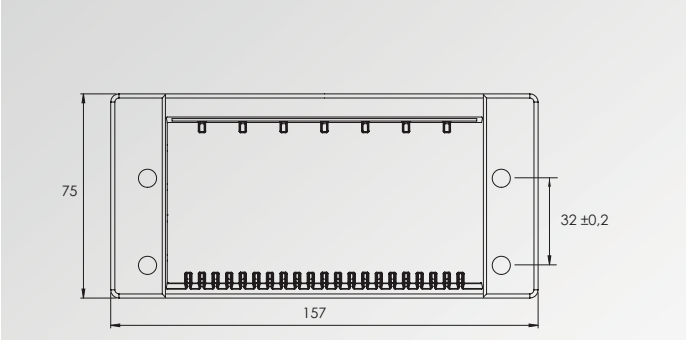
*4X for indoor use only

KEA
90° Cable Entry Adapter

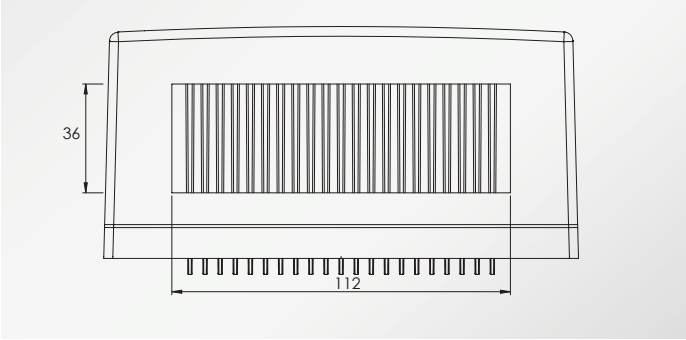
Type	Cut-out KEA	Cut-out cable entry	compatible for	Colour	Order No.	PU
KEA 24 W90 R	112 x 56 mm	112 x 36 mm	KEL-DP 24 B	black	48300	1
KEA 24 W90 S	112 x 56 mm	112 x 36 mm	KEL-ER 24, KEL-U 24, KEL 24 KEL-DPU 24, KEL-DPR, KEL-DPZ 24	black	48301	1



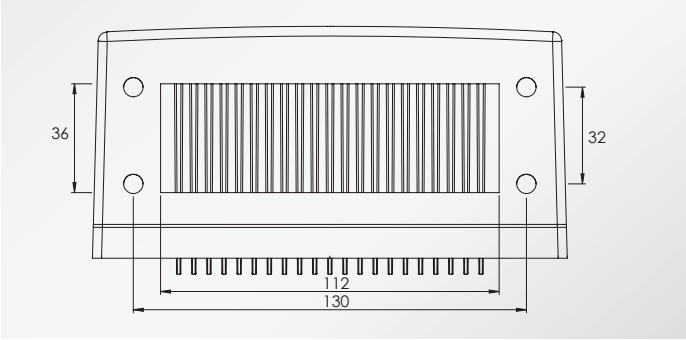
Cut-out and installation space KEA 24 W90 R and S



Rear side (wall side) KEA 24 W90 R and S



KEA 24 W90 R Cut-out for cable entry



KEA 24 W90 S Cut-out for cable entry

KEA 24 W90 R

KEA 24 W90 S

*4X for indoor use only

6.6 Further accessories
for enclosures

icotek offers useful enclosure accessories for easy assembly of cable entry components and EMC cable shield earthing products as well as for your cable management needs.

IP69K IP67 IP66 Made in Germany RoHS compliant

Hexagonal Locknuts
M16 – M85

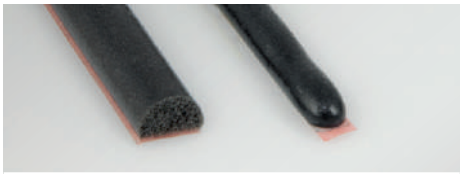
KGM / GM / GMT

358

Supports
for TS35 Rails and Bus Bars

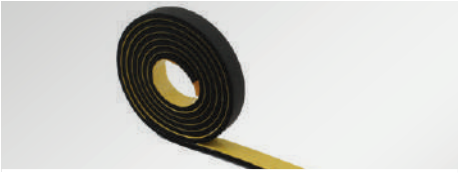
MF

359



Sealing Bead
for Enclosure Base Plates

360



Sealing Tape
for Enclosure Base Plates

360

Drainage Device

361

Pressure Compensation Element
with Metric Thread

PCE M12 x 1,5

361

Cable Clamp
for C-Rail Mount

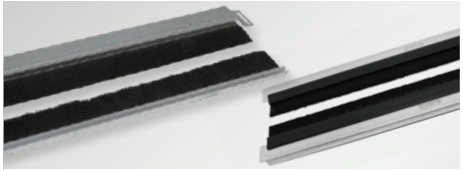
CCL

202 – 203

Rittal / Hoffman / Others
Universal Brush Strip
for Enclosures

KDR-BES-U

368 – 373



Rittal
Enclosure Gland Plates
with Brush Grommets

KDRS-BES-U / KDR-BES-TS8

369, 374 – 375

Rittal
Split Flange Plates
with Brush Strips

FP-AX-BES-U

376 – 377

Brush Strips for the Cable Management
in the Server Rack from various Manufacturers

BES 10 / BES 19

378 – 379

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KGM | GMT
Locknuts

Hexagon locknut with metric thread for assembly of components. For routing SUB-D, DVI or PROFIBUS connectors in combination with the split cable glands KVT/QVT, special locknuts with suitable cut-outs are required:

KGM-SUB-D9 fits D-Sub 9 connectors
(Required wall cut-out: Ø 36 mm)

KGM-PB fits DVI and PROFIBUS connectors
(Required wall cut-out: Ø 42 mm)

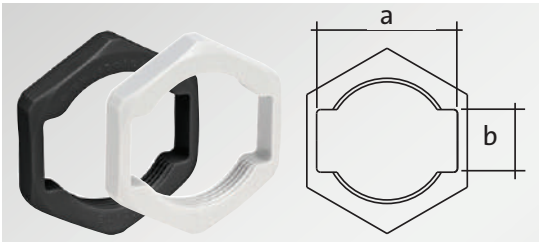
KGM-SUB-D25 fits SUB-D25 connectors
(Required wall cut-out: Ø 50 - 54 mm)

Split hexagon locknuts GMT for use in combination with split cable glands KVT/QVT whenever pre-terminated cables are routed inside cable protection conduits through a machine or cabinet wall. Suitable for split corrugated conduits CONFiX WST.

Specifications

Material	Polyamide (PA)/Polycarbonate (PC)
Color	gray (similar RAL 7035)
	black
Flame class	UL 94 V-0, self-extinguishing
Temperature	-30°C to +120°C
Properties	Halogen free, silicone free

Type KGM: Standard nut, plastic



Type KGM: SUB-D9, PB, SUB-D25

Type GMT: Split locknut

Thread	Type	Order No.	Material	Height [mm]	Wrench size	Diagonal [mm]	Cut-out a × b [mm]	PU
Type KGM: Standard nut, plastic								
M16 × 1.5	KGM 16	52272	PA	4.3 0.169 "	SW 22.8	28.2 1.11 "	-	10
M20 × 1.5	KGM 20	52273 52283	PA	7 0.276 "	SW 26	28.2 1.11 "	-	10
M25 × 1.5	KGM 25	52274 52284	PA	7 0.276 "	SW 32	36 1.417 "	-	10
M32 × 1.5	KGM 32	52275 52285	PA	7 0.276 "	SW 41	46 1.811 "	-	10
M40 × 1.5	KGM 40	52276 52286	PA	7 0.276 "	SW 50	56 2.205 "	-	10
M50 × 1.5	KGM 50	52277 52287	PA	8.5 0.335 "	SW 60	66 2.598 "	-	10
M63 × 1.5	KGM 63	52278 52288	PA	8.5 0.335 "	SW 75	83 3.268 "	-	5
M75 × 1.5	KGM 75	52289	PA	8.5 0.335 "	SW 85	93.1 3.665 "	-	5
M85 × 2	KGM 85	52290	PA	10 0.394 "	SW 100	109.5 4.311 "	-	5
Type KGM: PB, SUB-D9, SUB-D25								
M32 × 1.5	KGM-SUB-D9	45105 45106	PC	7 0.276 "	SW 41	46 1.811 "	35 × 16 1.378 x 0.63 "	10
M40 × 1.5	KGM-PB	45107 45109	PC	8 0.315 "	SW 50	55 2.165 "	43 × 17 1.693 x 0.669 "	10
M50 × 1.5	KGM-SUB-D25	45108 45110	PC	8 0.315 "	SW 60	66 2.598 "	55 × 16 2.165 x 0.63 "	10
Type GMT: Split locknut								
M16 × 1.5	GMT 16	31105	PA	8 0.315 "	SW 19	21 0.827 "	-	10
M20 × 1.5	GMT 20	31110	PA	9 0.354 "	SW 27	29 1.142 "	-	10
M25 × 1.5	GMT 25	31100	PA	9 0.354 "	SW 32	35 1.378 "	-	10
M32 × 1.5	GMT 32	31120	PA	12 0.472 "	SW 40	44 1.732 "	-	10
M40 × 1.5	GMT 40	31130	PA	15 0.591 "	SW 48	53 2.087 "	-	10
M50 × 1.5	GMT 50	31140	PA	15 0.591 "	SW 63	69 2.717 "	-	10

MF
Supports for TS35 Rails and Bus Bars

RoHS compliant

There are 4 models of supports for mounting bus bars 10 × 3 mm or 35 mm top hat DIN rails. Various supports are available to provide solutions for different conditions.

A mounting clip is used for fastening the bus bar to the supports. The support has M6 female screw threads to affix the mounting clip of the DIN rail with a M6 screw.

Advantages & Benefits

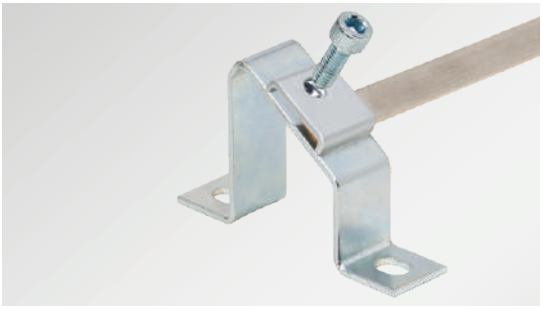
- Wide variety of supports with different sizes and designs
- Simple assembly of top hat DIN rails and 10 × 3 mm bus bars
- Support type D provides possibility to affix 2 top hat DIN rails

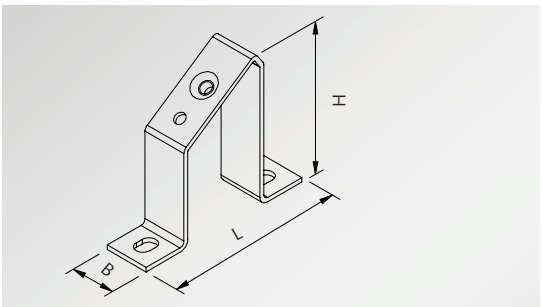
Specifications

Material	Sheet steel, galvanically zinc-plated

Accessories

Bus bar	Order No. 36100
Mounting clip	Order No. 36150





Description	Type	Version	Order No. without Clip	Order No. with Clip	Dimension [L × B × H]	PU
Type A	MF-A49	Type A	36056	36058	80 × 20 × 49 mm 3.15 x 0.787 x 1.929 "	10
	MF-A68	Type A	36064	36066	80 × 20 × 68 mm 3.15 x 0.787 x2.677 "	10
	MF-A88	Type A	36072	36074	80 × 20 × 88 mm 3.15 x 0.787 x 3.465 "	10
Type B	MF-B20	Type B	36000	36002	80 × 20 × 20 mm 3.15 x 0.787 x 0.787 "	10
	MF-B30	Type B	36008	36010	80 × 20 × 30 mm 3.15 x 0.787 x 1.181 "	10
	MF-B50	Type B	36016	36018	80 × 20 × 50 mm 3.15 x 0.787 x 1.969 "	10
	MF-B90	Type B	36024	36026	80 × 20 × 90 mm 3.15 x 0.787 x 3.543	10
Type C	MF-C40	Type C	36032	36034	40 × 18 × 40 mm 1.575 x 0.709 x 1.575 "	10
	MF-C53	Type C	36040	36042	40 × 18 × 53 mm 1.575 x 0.709 x 2.087 "	10
	MF-D49	Type D	36048	36050	120 × 20 × 49 mm 4.724 x 0.787 x 1.929 "	10

Bus bar 10 × 3 mm

Type		Order No.	PU
Bus bar 10 × 3 mm	10 × 3 × 1000 mm*	36100	1

* Other lengths available on request

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RoHS compliant

Sealing Bead

Self-adhesive foamed PU seal

The KDR-BMP enclosure base plates have a foamed PU seal glued to the underside. icotek now also offers this separately for individual applications.

The PU seal is applied to a self-adhesive carrier film and is available in 2 widths. The length is 2150 mm in each case. The height of the seal is determined by the respective width. The PU seal is easy to compress and has very good recovery properties.

Advantages & Benefits

- Very simple and quick installation
- Easy laying around corners
- Very good recovery properties

Specifications

Material	PU foam
Temperature	-40°C to 80°C
Properties	halogen free, silicone free

Type	Length	Width	Height	Order No.	PU
Sealing bead	2150 mm	6 mm	3.5 mm	43347	1
Sealing bead	2150 mm	9 mm	5 mm	43348	1

Installing the PUR seal is very easy: remove the protective film, stick it on, done!

Sealing Tape

icotek offers a one-sided self-adhesive sealing tape for the enclosure base plates. It is available in two lengths, 1 metre and 10 metres long.

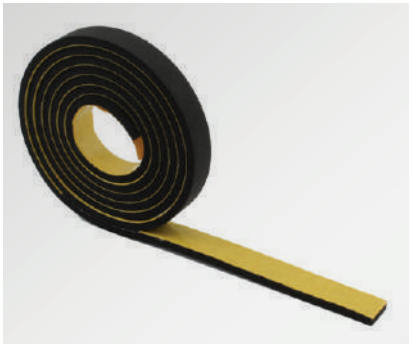
Advantages & Benefits

- Very simple and quick installation
- Very good recovery properties

Specifications

Material	Cellular rubber (CR/NBR)
Temperature	-40°C to +100°C
Flame class	UL 94-HF1

Type	Length	Width	Height	Order No.	PU
Sealing tape	1 m	10 mm	3 mm	42999	1
Sealing tape	10 m	10 mm	3 mm	42999.10000	1



Drainage Device
Pressure Compensation Element

IP69K IP66 Made in Germany RoHS compliant

Drainage Device

In enclosures and housings with a high degree of protection, temperature differences result in condensation. By using a drainage device, it is possible to safely drain off the condensate without losing a maximum enclosure protection of IP66. A water-permeable membrane ensures the drainage of the enclosure due to its capillary effect. The design prevents splash water from entering the interior of the enclosure.

Advantages & Benefits

- High protection class IP66, IP69K
- Good drainage performance
- Easy assembly
- Based on a standard cut-out
- Sturdy, weatherproof and UV-resistant housing

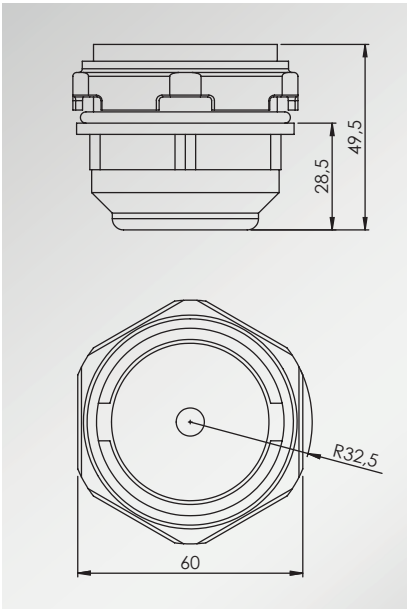
Specifications

Water entry level	0 mm (at 0.5 mm wall thickness)
Gasket	Sealing gasket NBR
Water permeability	approx. 200 ml/h with a water column of 5 mm
Mounting position	horizontal, lowest point
Temperature	-45°C to +70°C -49°F to +158°F

Type	Dimension Ø	Cut-out Ø	Order No.	PU
Drainage Device for M50 hole	60 mm 2.362"	50 mm 1.969"	99193	1

Assembly

The drainage device is fixed in the bottom of the enclosure using the union nut in a hole of ø 50.5 +0.5 mm. Make sure that the sealing ring is on the outer housing wall and that the hole is free of burrs.



Pressure Compensation Element

with metric thread

The pressure compensation element PCE with M12 x 1.5 thread is used to avoid variations in pressure caused by differences in temperature and thus to prevent damage caused by condensation. It provides protection class IP68. The pressure compensation element is easy to install by screwing it directly into the enclosure wall or via adapter grommets AT-K-M 12x1.5.

Specifications

Material	Polyamide
Flame class	UL 94 V-2
Protection class	IP67, IP68
Temperature	-20°C to +100°C

Type	Order No.	Thread	PU
PCE M12 x 1.5	99190	M12 × 1.5	10

KVT-ER 63|4 equipped with pressure compensation element

7

RoHS compliant

Made in Germany

Cable Pass-Through with Brush Seal

Brush Plates and Brush Strips for Enclosures, Server Racks, Machines

KEL-BES

KEL-BES-S

KDR-BES-U

KDRS-BES-U

FP-AX-BES-U

BES

7 Cable Pass-Through with Brush Seal

Brush Plates and Brush Strips for Enclosures, Server Racks, Machines

RoHS compliant | Made in Germany

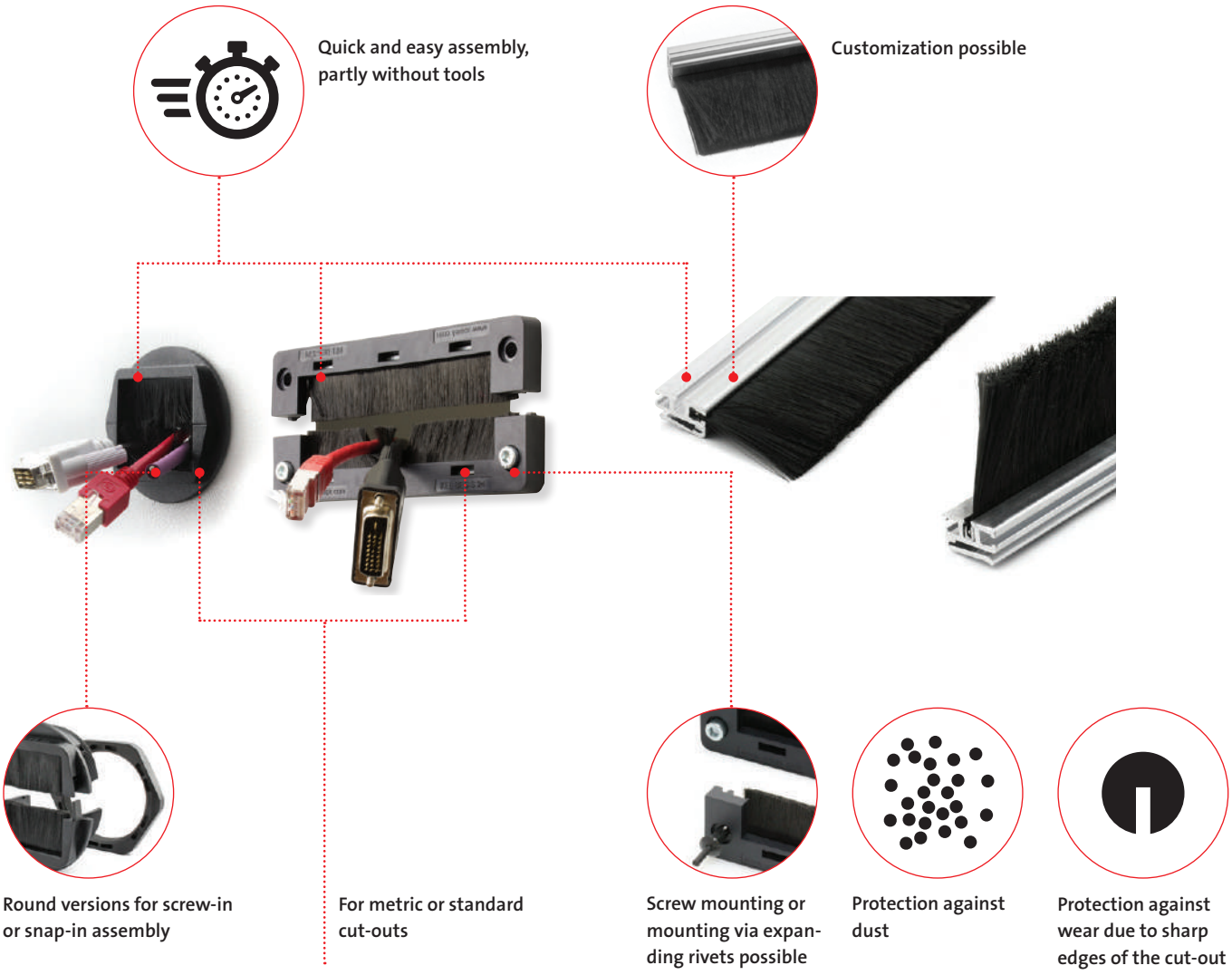
icotek offers cable pass-through solutions with brush seals that are perfectly suitable for applications where no high sealing rate is required. The icotek brush seal solutions are meant for dust and dirt-proof cable pass-through of cables with and without preassembled connectors.

The application areas for a cable pass-through with brush seal are very versatile, e.g. in an electrical enclosure, a server rack, on a machine wall or on raised floors. icotek brush plates and brush strips are a cost-effective solution for a professional cable management.

The brush seal solutions allow reduced airflow while filtering out dust and larger particles. Thermal protection and visual screening are additional benefits. icotek brush plates also protect cables against wear due to sharp edges of the cut-out.

For cable pass-through applications in base areas of enclosures and server racks by numerous manufacturers and for wide cut-outs on machine walls icotek offers the universal brush strip KDR-BES-U. Due to the innovative clamp profile the brush strip can be clamped on any sheet metal edge, even in a 90° angle.

The 2-piece enclosure gland plates KDR-BES and flange plates FP-AX-BES are pre-equipped with brush strips.



Brush Plate for Cable Pass-Through

Brush Plate
for Cable Pass-Through
for Standard Cut-Outs

KEL-BES

366

Split Brush Plate
for Cable Pass-Through
for Standard Cut-Outs

KEL-BES-S

367

Thread Extension
for Cable Glands and Cable Entry Plates
M25, M32, M50, M63

TE-M

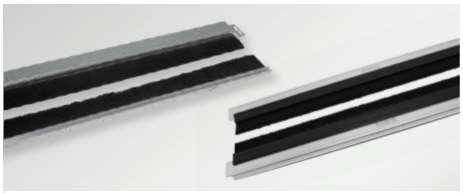
346 – 349

Brush Strips, Gland Plates and Flange Plates with Brush Strips

Universal Brush Strip
for Enclosures (Rittal/Hoffman/Others)

KDR-BES-U / KDR-BES-U-... Series

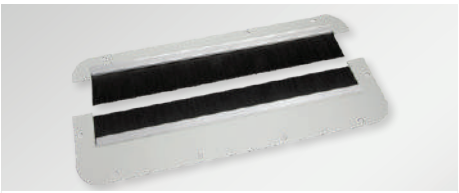
368 – 373



Rittal
Enclosure Gland Plates
with Brush Grommets

KDRS-BES-U / KDR-BES-TS8

374 – 375



Rittal
Split Flange Plates
with Brush Strips

FP-AX-BES-U

376 – 377

Brush Strips for the Cable Management in the 10" and 19" Server Rack

Brush Strips for the Cable Management
in the 10"/19" Server Rack from various Manufacturers

BES 10 / BES 19

378 – 379

KEL-BES
Brush Plate for Cable Pass-Through

Brush plates KEL-BES for routing cables into server racks, control panels and electrical enclosures.
KEL-BES is also an ideal solution for entry and exit of cables that are routed inside raised floors, e.g. in datacentres or IT closets. The brush plates can either be mounted via screws or via expanding rivets.

The KEL-BES plates match exactly the cut-out dimensions for 10-, 16- or 24-pin standard industrial connectors.

Advantages & Benefits

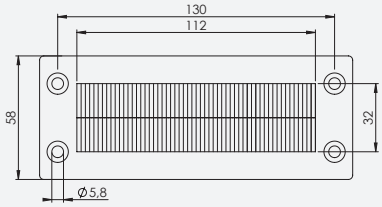
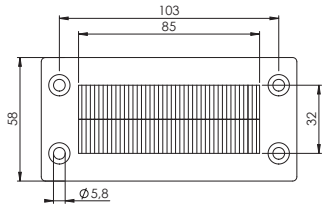
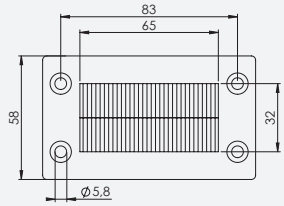
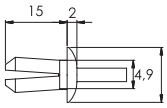
- Fast and easy assembly (optional: snap in assembly)
- Versatile utilisation
- Filtering out dust, hair and larger particulate matter
- Visual screening
- Protects cables against wear due to sharp edges of the cut-out
- For industrial standard cut-outs

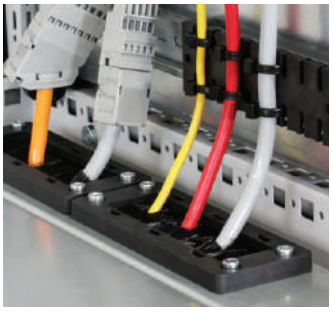
Specifications

Material	Frame, rectangular: Polyamide (PA) (Flame class UL 94 V-0) Brushes: Polyamide (PA) Brush profile: sheet steel, zinc plated
Operating temperature	-20°C to +90°C - 4°F to + 194°F
Properties	Halogen-free, silicone-free
Frame depth	10 mm / 0.394 "

Accessories

KEL-EMC-PF Cable collectors	275

Description	Type	Order No.	Cut-out	PU
	KEL-BES 24	51515	36 x 112 mm 1.378 x 4.409 "	10
	KEL-BES 16	51510	36 x 86 mm 1.378 x 3.386 "	10
	KEL-BES 10	51505	36 x 65 mm 1.378 x 2.56 "	10
	Expanding rivets	99153	For wall thickness 1 – 4 mm 0.039 - 0.157 "	100



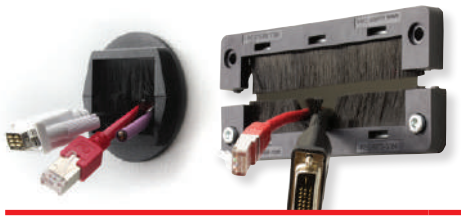
Suitable for control panel construction ...

... as well as for energy and building technology

Screw mounting or mounting via expanding rivets possible

KEL-BES-S
Split Brush Plate for Cable Pass-Through

RoHS compliant · Made in Germany



Split brush plates KEL-BES-S for routing cables into server racks, control panels and electrical enclosures. The brush plates can either be mounted via screws or via expanding rivets. Due to the split frame the KEL-BES-S can also be subsequently installed around the routed cables. The KEL-BES-S frames match exactly the cut-out dimensions for 10-, 16- or 24-pin standard industrial connectors.

For round metric cut-outs M32/M50 icotek offers the split KEL-BES-S 32/50. It can be either directly snapped into the cut-out or screwed with a locknut (included in the shipment).

Advantages & Benefits

- Fast and easy assembly (optional: snap in assembly)
- Subsequent assembly possible
- Versatile utilisation
- Filtering out dust, hair and larger particulate matter
- Visual screening
- Protects cables against wear due to sharp edges of the cut-out
- For industrial standard cut-outs

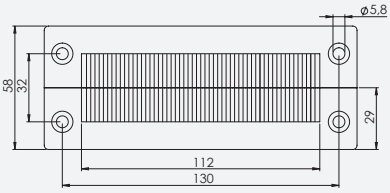
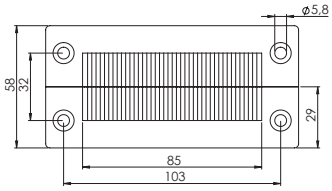
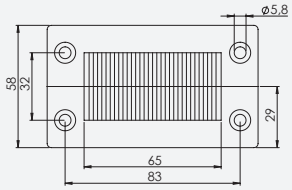
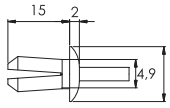
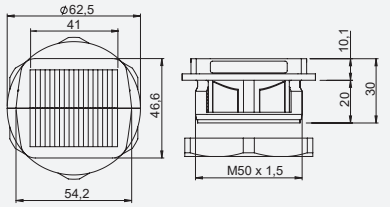
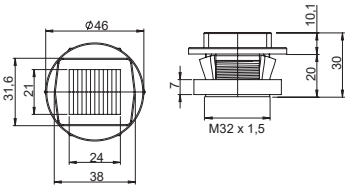
Specifications

Material	Frame, rectangular: Polyamide (PA) Frame, round: Polycarbonate (PC) (Flame class UL94-Vo) Brushes: Polyamide (PA) Brush profile: sheet steel, zinc plated
Operating temperature	- 20°C to + 90°C - 4°F to + 194°F
Properties	Halogen-free, silicone-free
Frame depth	10 mm

Accessories

KEL-EMC-PF Cable collectors	275
TE-M	346-349

Round version with M50 thread for locknut or snap-in mounting

Description	Type	Order No.	Cut-out	PU
	KEL-BES-S 24	51522	36 x 112 mm 1.378 x 4.409 "	10
	KEL-BES-S 24 with expanding rivets	51522.002	36 x 112 mm 1.378 x 4.409 "	10
	KEL-BES-S 16	51521	36 x 86 mm 1.378 x 3.386 "	10
	KEL-BES-S 16 with expanding rivets	51521.002	36 x 86 mm 1.378 x 3.386 "	10
	KEL-BES-S 10	51520	36 x 65 mm 1.378 x 2.559 "	10
	KEL-BES-S 10 with expanding rivets	51520.002	36 x 65 mm 1.378 x 2.559 "	10
	Expanding rivets	99153	For wall thickness 1 – 4 mm 0.039 - 0.157 "	100
	KEL-BES-S 50	51540	M50 x 1.5 Snap-in function for wall thickness 1 – 2.5 mm 0.039 - 0.098 "	10
	KEL-BES-S 32	51538	M32 x 1.5 Snap-in function for wall thickness 1 – 2.5 mm 0.039 - 0.098"	10

KDR-BES-U
Universal Brush Strip for Enclosures

RoHS compliant | Made in Germany

Cable pass-through brush strip for enclosure bases or individual cut-outs on cabinets, enclosures, panels, server racks or machine walls. Due to the innovative and universal clamp strip the brush can also be assembled in a 90° angle, e.g. on bent sheet metal. Suitable for wall thickness 1.5 - 2 mm or 2.5 - 3 mm. Brush may be removed from the profile at any time and remounted using other mounting options.

The KDR-BES-U brush strip is adaptable to almost any enclosure or cabinet type on the market. The standard gland plates included in the enclosure delivery can be used for assembly. They do not have to be changed.

Advantages & Benefits

- Fast, simple and tool-free mounting
- Original enclosure gland plates can be used
- Three mounting types possible
- Brush may be remounted at any time using other mounting options
- Available in any custom length up to 1.500 mm

Specifications

Material clamp strip	Aluminium
Material backing strips	Metal, galvanized
Material bristles	Polyamide (PA)
For sheet thickness	1.5 – 2 mm, 2.5 – 3 mm
Operating temperature	-20°C to +90°C -4°F to +194°F
Properties	Halogen free, silicone free

Brush Strips in Your Required Length (up to 1.500 mm)

X (mm) = sight size of base opening
X max. = 1500 mm

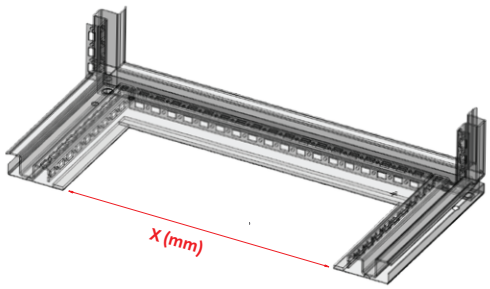
Order numbers examples:
For sheet thickness 1.5 - 2 mm, trim height 35 mm:
X = **999** mm –> Order No. 58210.**0999**

For sheet thickness 2.5 - 3 mm, trim height 35 mm:
X = **999** mm –> Order No. 58225.**0999**

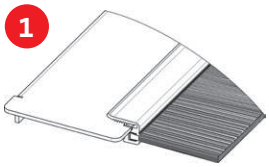
For sheet thickness 1.5 - 2 mm, trim height 50 mm:
X = **999** mm –> Order No. 58215.**0999**

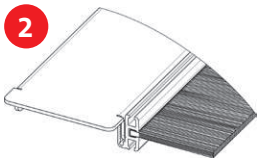
For sheet thickness 2.5 - 3 mm, trim height 50 mm:
X = **999** mm –> Order No. 58230.**0999**

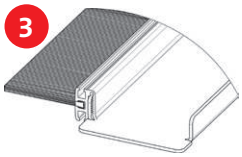
Scope of delivery:
1× KDR-BES-U (clamp strip + brush)

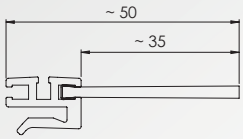


KDR-BES-U Mounting Options

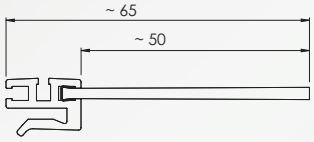








pure brush length: 35 mm



pure brush length: 50 mm

Two brush strips arranged in opposite directions

KDR-BES-U

Brush Strip for Gland Plates
Rittal VX25/TS 8 & Hoffman PROLINE G2

RoHS compliant | Made in Germany

Type	Enclosure type	Enclosure width	Brush strip length	Trim height	Order no.	PU
KDR-BES-U for Rittal VX25 enclosures						
KDR-BES-U-VX25-600	Rittal VX25	600 mm / 23.622 "	452 mm / 17.795 "	35 mm / 1.38 "	58225.0452	1
KDR-BES-U-VX25-800	Rittal VX25	800 mm / 31.496 "	652 mm / 25.669 "	35 mm / 1.38 "	58225.0652	1
KDR-BES-U-VX25-1000	Rittal VX25	1000 mm* / 39.37 " with division bar	402 mm / 15.827 "	35 mm / 1.38 "	58225.0402	1
KDR-BES-U-VX25-1200	Rittal VX25	1200 mm* / 47.244 " with division bar	502 mm / 19.764 "	35 mm / 1.38 "	58225.0502	1
KDR-BES-U-VX25-600	Rittal VX25	600 mm / 23.622 "	452 mm / 17.795 "	50 mm / 1.97 "	58230.0452	1
KDR-BES-U-VX25-800	Rittal VX25	800 mm / 31.496 "	652 mm / 25.669 "	50 mm / 1.97 "	58230.0652	1
KDR-BES-U-VX25-1000	Rittal VX25	1000 mm* / 39.37 " with division bar	402 mm / 15.827 "	50 mm / 1.97 "	58230.0402	1
KDR-BES-U-VX25-1200	Rittal VX25	1200 mm* / 47.244 " with division bar	502 mm / 19.764 "	50 mm / 1.97 "	58230.0502	1
KDR-BES-U for Rittal TS8 enclosures						
KDR-BES-U-TS8-1200	Rittal TS8	1200 mm* / 47.244 " with division bar	495 mm / 19.488 "	35 mm / 1.38 "	58210.0495	1
KDR-BES-U for Hoffman PROLINE G2 enclosures						
KDR-BES-U-HG2-600	Hoffman PROLINE G2	600 mm / 1200 mm*	362 mm / 14.25 "	35 mm / 1.38 "	58210.0362	1
KDR-BES-U-HG2-800	Hoffman PROLINE G2	800 mm / 31.496 "	562 mm / 22.13 "	35 mm / 1.38 "	58210.0562	1
KDR-BES-U-HG2-1000	Hoffman PROLINE G2	1000 mm / 39.37 "	762 mm / 30 "	35 mm / 1.38 "	58210.0762	1
Edge protection trim	universal	Clamping range 1 - 2 mm / 0.4 - 0.8"			99152	100 m

Edge protection trim (100 m)
Order No. 99152

* in case both fields of the enclosure are equipped, 2 brush strips KDR-BES-U are necessary.

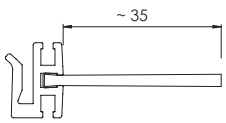
KDR-BES-U
Brush Strip
for Häwa Enclosures

RoHS compliant | Made in Germany

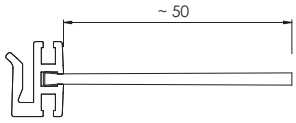
Type	Enclosure type	Enclosure width	Brush strip length	Trim height	Order no.	PU
KDR-BES-U for Häwa enclosures series H395 and series H390						
KDR-BES-U HW-600	Häwa	600 mm	392 mm	35 mm	58210.0392	1
KDR-BES-U HW-800	Häwa	800 mm	592 mm	35 mm	58210.0592	1
KDR-BES-U HW-1000	Häwa	1000 mm	792 mm	35 mm	58210.0792	1
KDR-BES-U HW-1200	Häwa	1200 mm	992 mm	35 mm	58210.0992	1
KDR-BES-U HW-600	Häwa	600 mm	392 mm	50 mm	58215.0392	1
KDR-BES-U HW-800	Häwa	800 mm	592 mm	50 mm	58215.0592	1
KDR-BES-U HW-1000	Häwa	1000 mm	792 mm	50 mm	58215.0792	1
KDR-BES-U HW-1200	Häwa	1200 mm	992 mm	50 mm	58215.0992	1

These brush strips KDR-BES-U are suitable for Häwa enclosures series H395 and series H390.

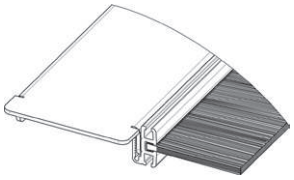
icotek also produces brush strips for numerous other enclosure brands and in other sizes according to your wishes. Ask us at pm@icotek.com!



pure brush length: 35 mm



50 mm



Mounting option Häwa

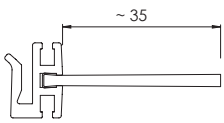
* in case both fields of the enclosure are equipped, 2 brush strips KDR-BES-U are necessary.

KDR-BES-U
Brush Strip
for Schneider Electric Enclosures

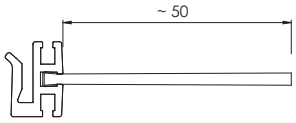
RoHS compliant | Made in Germany

Type	Enclosure type	Enclosure width	Brush strip length	Trim height	Order no.	PU
KDR-BES-U for Schneider Electric enclosures series Spacial SF						
KDR-BES-U SSP-600	Schneider Electric	600 mm	414 mm	35 mm	58210.0414	1
KDR-BES-U SSP-800	Schneider Electric	800 mm	614 mm	35 mm	58210.0614	1
KDR-BES-U SSP-1000	Schneider Electric	1000 mm	814 mm	35 mm	58210.0814	1
KDR-BES-U SSP-1200	Schneider Electric	1200 mm *	477 mm	35 mm	58210.0477	1
KDR-BES-U SSP-600	Schneider Electric	600 mm	414 mm	50 mm	58215.0414	1
KDR-BES-U SSP-800	Schneider Electric	800 mm	614 mm	50 mm	58215.0614	1
KDR-BES-U SSP-1000	Schneider Electric	1000 mm	814 mm	50 mm	58215.0814	1
KDR-BES-U SSP-1200	Schneider Electric	1200 mm *	477 mm	50 mm	58215.0477	1

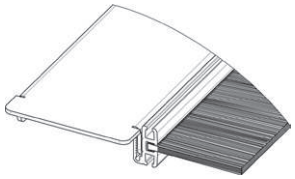
These brush strips KDR-BES-U are suitable for Schneider Electric enclosures series Spacial SF.



pure brush length: 35 mm



50 mm



Mounting option Schneider Electric

* in case both fields of the enclosure are equipped, 2 brush strips KDR-BES-U are necessary.

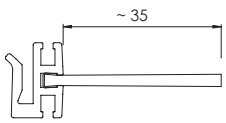
KDR-BES-U
Brush Strip
for ELDON Enclosures

RoHS compliant | Made in Germany

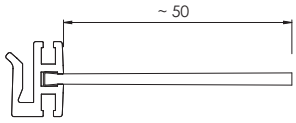
Type	Enclosure type	Enclosure width	Brush strip length	Trim height	Order no.	PU
KDR-BES-U for ELDON/nVent enclosures type MCD, MCS, MKS und MKD						
KDR-BES-U Eldon 600	ELDON/nVent	600 mm	430 mm	35 mm	58221.0430	1
KDR-BES-U Eldon 800 + 1600	ELDON/nVent	800 mm 1600 mm *	630 mm	35 mm	58221.0630	1
KDR-BES-U Eldon 1000	ELDON/nVent	1000 mm	830 mm	35 mm	58221.0830	1
KDR-BES-U Eldon 1200	ELDON/nVent	1200 mm *	490 mm	35 mm	58221.0490	1
KDR-BES-U Eldon 600	ELDON/nVent	600 mm	430 mm	50 mm	58222.0430	1
KDR-BES-U Eldon 800 + 1600	ELDON/nVent	800 mm 1600 mm *	630 mm	50 mm	58222.0630	1
KDR-BES-U Eldon 1000	ELDON/nVent	1000 mm	830 mm	50 mm	58222.0830	1
KDR-BES-U Eldon 1200	ELDON/nVent	1200 mm *	490 mm	50 mm	58222.0490	1

These brush strips KDR-BES-U are suitable for ELDON/nVent enclosures type MCD, MCS, MKS und MKD.

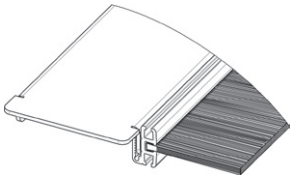
icotek also produces brush strips for numerous other enclosure brands and in other sizes according to your wishes. Ask us at pm@icotek.com!



pure brush length: 35 mm



50 mm



Mounting option ELDON

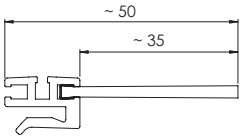
* in case both fields of the enclosure are equipped, 2 brush strips KDR-BES-U are necessary.

KDR-BES-U
Brush Strip
for ETA Enclosures

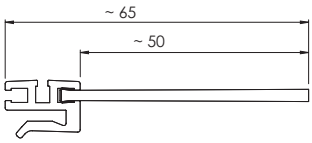
RoHS compliant | Made in Germany

Type	Enclosure type	Enclosure width	Brush strip length	Trim height	Order no.	PU
KDR-BES-U for ETA enclosures type E NUX						
KDR-BES-U 600 ETA E NUX	ETA	600 mm	363 mm	35 mm	58221.0363	1
KDR-BES-U 800 ETA E NUX	ETA	800 mm	563 mm	35 mm	58221.0563	1
KDR-BES-U 1000 ETA E NUX	ETA	1000 mm *	345 mm	35 mm	58221.0345	1
KDR-BES-U 1200 ETA E NUX	ETA	1200 mm *	445 mm	35 mm	58221.0445	1
KDR-BES-U 600 ETA E NUX	ETA	600 mm	363 mm	50 mm	58222.0363	1
KDR-BES-U 800 ETA E NUX	ETA	800 mm	563 mm	50 mm	58222.0563	1
KDR-BES-U 1000 ETA E NUX	ETA	1000 mm *	345 mm	50 mm	58222.0345	1
KDR-BES-U 1200 ETA E NUX	ETA	1200 mm *	445 mm	50 mm	58222.0445	1

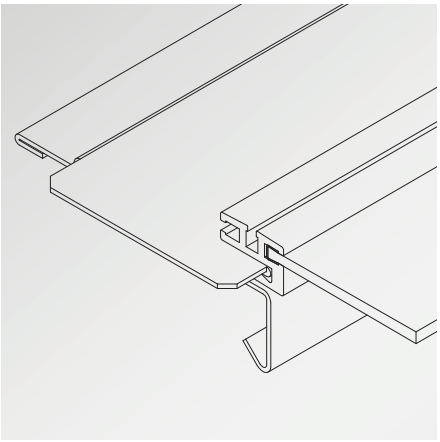
These brush strips KDR-BES-U are suitable for ETA enclosures type E NUX.

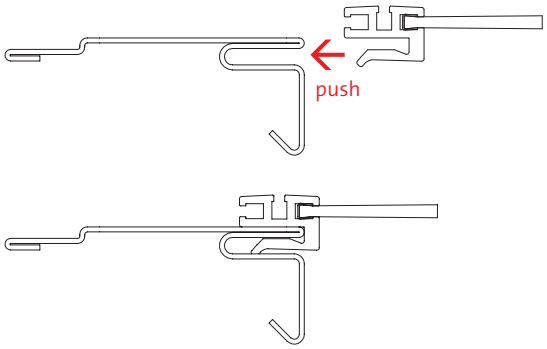


pure brush length: 35 mm



50 mm





Assembly ETA

* in case both fields of the enclosure are equipped, 2 brush strips KDR-BES-U are necessary.

KDRS-BES-U

Enclosure Gland Plate, **Narrow**, with Brush Strips for Rittal VX25 Enclosures

RoHS compliant | Made in Germany

The KDRS-BES-U consists of a narrow plate with matching brush strip with trim height 50 mm. The scope of delivery also includes a KDR-BES-U brush strip for sheet thicknesses of 2.5 – 3.0 mm with a trim height of 50 mm, which is mounted on the Rittal base plate. As a result, both brush strips are arranged in opposite directions and overlap.

The KDRS-BES-U gland plate with brush strip is very narrow. This allows the inserted cables to be inserted straight into the wiring duct.

The gland plate is fitted with threaded screw holes M8 on the left and right for grounding.

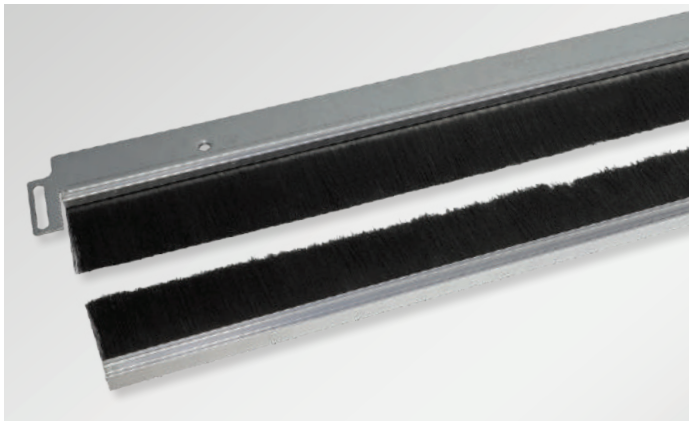
The gland plates KDRS-BES-U are designed for Rittal enclosures VX25.

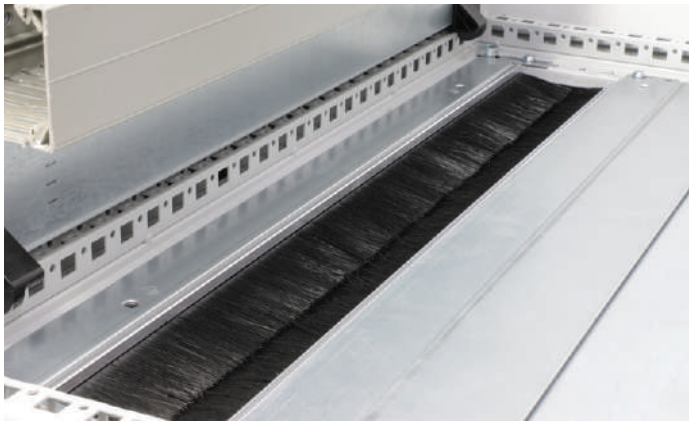
Advantages & Benefits

- Easy assembly and removal
- The gland plate is very narrow. As a result, the inserted cables are inserted straight into the cable duct.
- Ideal for maintenance and retrofitting
- Space-saving solution
- The gland plate KDRS-BES-U are designed for Rittal enclosures VX25. Other sizes can be supplied on request.

Specifications

Material	Gland plate: Sheet steel, zinc-plated Brush strip: Polyamid (PA)
Operating temperature	-20°C to +90°C -4°F to +194°F
Properties	Halogen free, silicone free





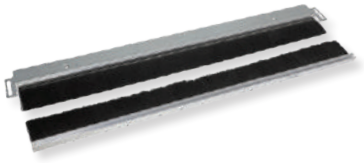
Advantage KDRS: Straight cable routing into the cable duct due to the extremely narrow gland plate

icotek can also produce enclosure gland plates for numerous other enclosure brands and in other sizes according to your wishes. Ask us at pm@icotek.com.

KDRS-BES-U

Enclosure Gland Plate, **Narrow**, with Brush Strips for Rittal VX25 Enclosures

RoHS compliant | Made in Germany



Type	Enclosure type	Enclosure width	Sight size of base plate opening	Trim height	Order no.	PU
KDR-BES-U for Rittal enclosures VX 25						
KDRS-BES-U VX-25-600	VX 25	600 mm	452 mm	50 mm	58030	1
KDRS-BES-U VX-25-800	VX 25	800 mm	652 mm	50 mm	58031	1
KDRS-BES-U VX-25-1000	VX 25	1000 mm *	402 mm	50 mm	58032	1
KDRS-BES-U VX-25-1200	VX 25	1200 mm *	502 mm	50 mm	58033	1

* in case both fields of the enclosure are equipped, 2 complete gland plates are necessary.

FP-AX-BES-U
Split Flange Plates with Brush Strips

RoHS compliant | Made in Germany

Two-part flange plates, each with two brush strips arranged in opposite directions with different trim heights (1 x 35 mm and 1 x 50 mm). They enable the routing of cables already pre-assembled with connectors and prevent dirt from entering the enclosure.

The flange plates are designed for Rittal enclosures of type AX.

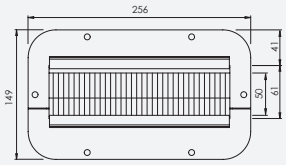
Advantages & Benefits

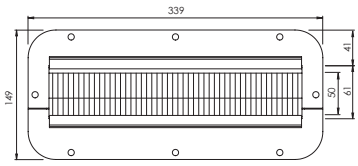
- Easy assembly
- Proven brush solution
- The use of two overlapping brush strips arranged in opposite directions increases tightness
- Ready for installation

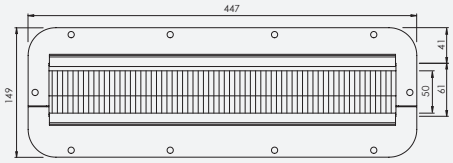
Specifications

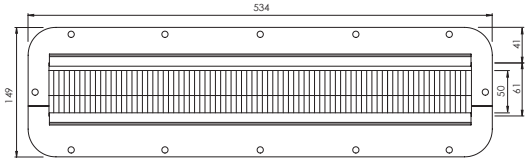
Flange plate	Sheet steel glossy powder-coated, RAL 7035
Brush profile	Aluminum
Brush holder	Metal, galvanized
Bristles	Polyamide (PA)
Operating temperature	-20°C to +90°C (static) - 4°F to + 194°F (static)
Properties	Halogen free, silicone free

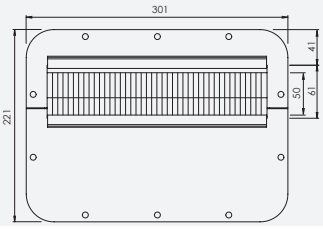
icotek also produces flange plates with brush strips for numerous other enclosure brands. Ask us at pm@icotek.com!

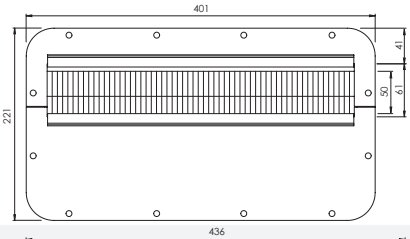


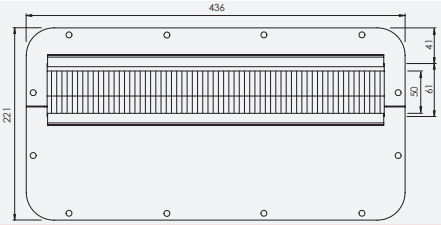












FP-AX-BES-U
Split Flange Plates with Brush Strips

RoHS compliant | Made in Germany

Type	Size flange plate	suitable for		Order No.
FP-AX-BES-U 256 x 149 mm, two-part, mounted with KDR-BES-U trim height 35 mm + 50 mm	1	AX 1033.000 AX 1034.000		44100
FP-AX-BES-U 339 x 149 mm, two-part, mounted with KDR-BES-U trim height 35 mm + 50 mm	2	AX 1031.000 AX 1380.000 AX 1038.000 AX 1077.000 AX 1100.000 AX 1045.000 AX 1094.000 AX 1380.000		44101
FP-AX-BES-U 447 x 149 mm, two-part, mounted with KDR-BES-U trim height 35 mm + 50 mm	3	AX 1050.000 AX 1057.000		44102
FP-AX-BES-U 534 x 149 mm, two-part, mounted with KDR-BES-U trim height 35 mm + 50 mm	4	AX 1039.000 AX 1060.000 AX 1054.000 AX 1076.000 AX 1058.000 AX 1090.000		44103
FP-AX-BES-U 301 x 221 mm, two-part, mounted with KDR-BES-U trim height 35 mm + 50 mm	5	AX 1338.000 AX 1037.000 AX 1073.000 AX 1055.000 AX 1180.000 AX 1280.000 AX 1181.000 AX 1281.000	AX 1055.450 AX 1095.000 AX 1281.450	44104
FP-AX-BES-U 401 x 221 mm, two-part, mounted with KDR-BES-U trim height 35 mm + 50 mm	6	AX 1350.000 AX 1130.000 AX 1110.000 AX 1213.000 AX 1114.000 AX 1214.000 AX 1115.000 AX 1096.000 AX 1350.450		44105
FP-AX-BES-U 436 x 221 mm, two-part, mounted with KDR-BES-U trim height 35 mm + 50 mm	7	AX 1339.000 AX 1360.000 AX 1376.000 AX 1260.000 AX 1116.000 AX 1059.000 AX 1091.000 AX 1261.000 AX 1091.450	AX 1112.000 AX 1113.000 AX 1261.450 AX 1360.450 AX_IT 7641.350 AX_IT 7643.350 AX_IT 7645.350 AX_IT 7646.400	44106

BES 10 | BES 19

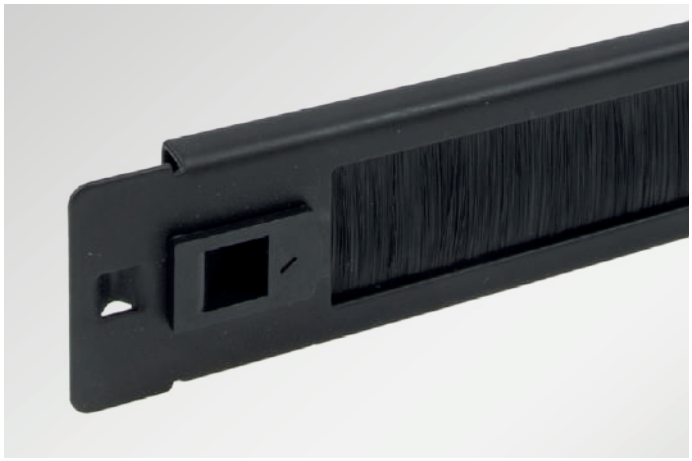
Brush Strips for the Cable Management in the 10" and 19" Server Rack

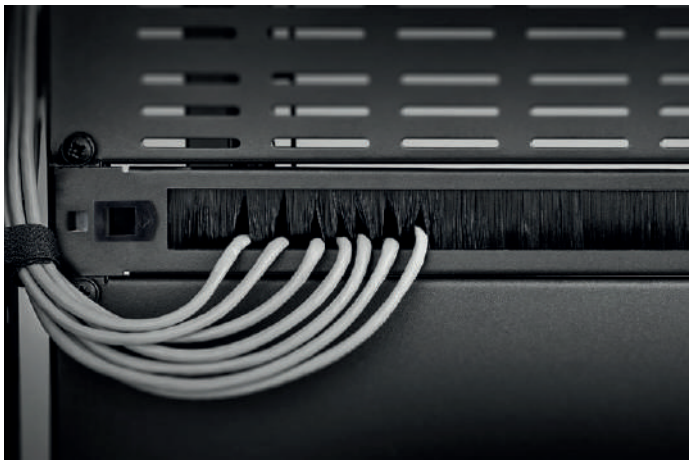
RoHS compliant

This brush strip from icotek is suitable for installation in 10" or 19" server racks from various manufacturers.

The special feature of the BES brush strip is that the integrated spring locks allow tool-free assembly and disassembly. All that is needed is to release the locking mechanism on both sides.

The network cables are simply passed through the brush strip. The cables are hidden from view inside the network cabinet. This gives a tidy appearance. The brush strip also prevents the ingress of dirt.





Advantages & Benefits

- Suitable for 10" and 19" server racks from various manufacturers
- Tool-less assembly and disassembly with spring locks
- Ready for installation

Specifications

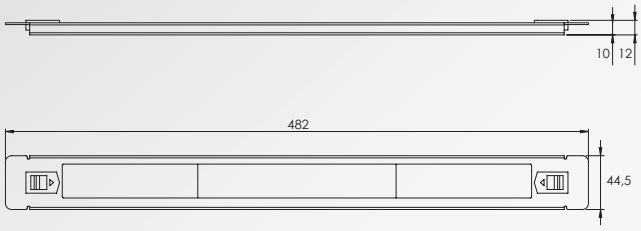
Size	1 Rack Unit (1 RU)
Frame material	Metal
Bristles material	Polyamid (PA)
Color	Black
Operating temperature	-30°C to +80°C - 22°F to + 176°F

BES 10 | BES 19

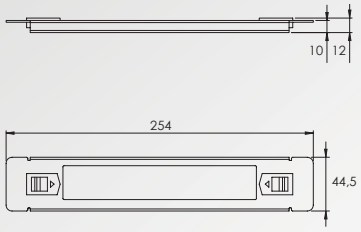
Brush Strips for the Cable Management in the 10" and 19" Server Rack

RoHS compliant

Type	Enclosure type	Height	Length	Depth	Order No.	PU
BES 19 Cable management brush strip	Server rack 19"	44,5 mm	482 mm	12 mm	51500	1
BES 10 Cable management brush strip	Server rack 10"	44,5 mm	254 mm	12 mm	51501	1

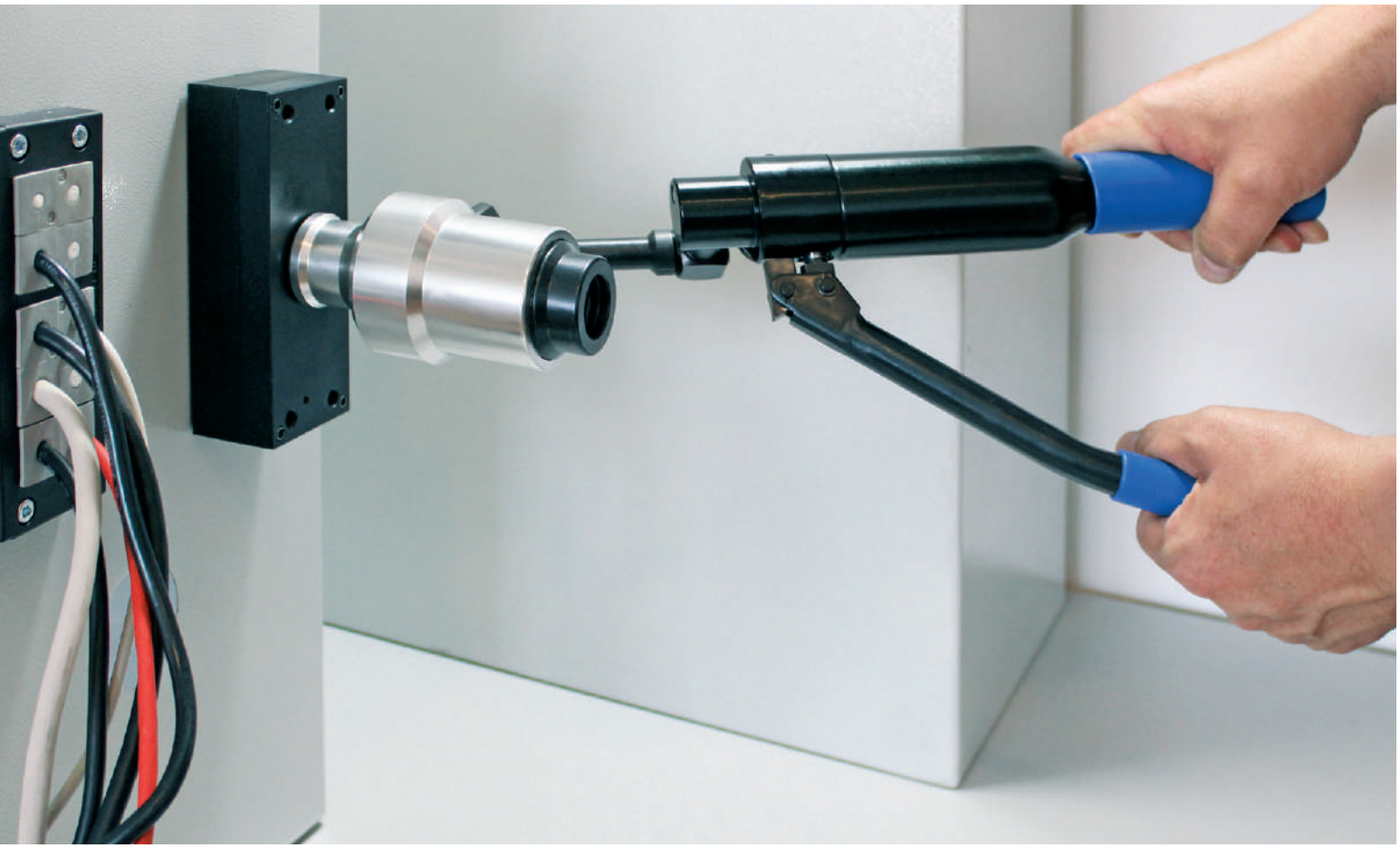


BES 19



BES 10

7
7.1
7.2
7.3



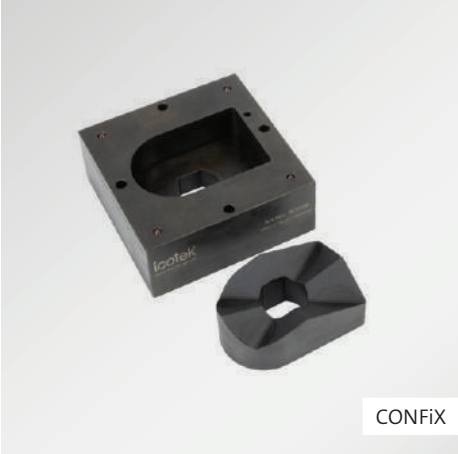
icotek TOOLS

Punch Drivers, Knockout Punches and Useful Tools

LIGHT

PRO

DIN-RC 2



CONFiX

KMS

icotek offers a small-sized hand hydraulic punch driver without a hose which allows quick and easy punching of rectangular, square or round holes. When you have to punch several holes, this hand hydraulic punch driver is much faster than manual wrench-style punches.

icotek offers round knockout punches for cut-outs in metric and PG sizes. This self-centering knockout punches split slugs into 2 or 3 pieces for easy slug removal. For installation of pushbuttons and round switches icotek offers a 22.5 mm punch with integrated twist protection notch.

icotek also offers rectangular and square punches and dies, for cut-out sizes of 6-, 10-, 16-, 24- and 32-multi-pin industrial connectors as well as for most icotek cable entry systems.

Advantages & Benefits

1. Maximum Flexibility

Due to its high hydraulic force the compact, lightweight hand hydraulic punch driver makes it easy to punch holes into stainless V2A steel, mild steel, aluminum or plastics. The cylinder of the punch driver rotates 360° on 3 axles. Therefore, maximum flexibility even in hard-to-reach places is provided.

2. Multi-Fold Slug Splitting

The special cutting geometry of the round punches reduces the cutting pressure and therefore the required effort. The punch splits slugs into several pieces for easy slug removal (type related).

3. Perfect for icotek Cable Entry Components

The metric round, rectangular and square knockout punches can be used for industrial standard cut-outs of heavy multi-pin connectors and many icotek cable entry components.

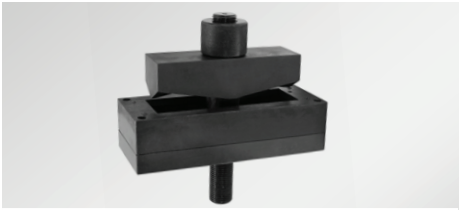
Punch Driver Sets
Hand Hydraulic Punch Driver
& Round Knockout Die Set, Metric,
Hydraulic Foot Pump

384 – 386

Rail Cutters
for DIN Rails and Bus Bars

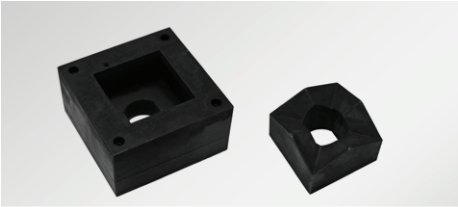
DIN-RC 1 / DIN-RC 2

387



Rectangular & Square Punches
for Cut-Outs of Heavy Multi-Pin Industrial
Connectors and many icotek Cable Entry
Components
for Steel, Aluminum

388 – 389



Rectangular & Square Punches
for Cut-Outs in Special Sizes
for Steel, Aluminum

390 – 391

Rectangular & Square Punches
for Cut-Outs of Heavy Multi-Pin Industrial
Connectors and many icotek Cable Entry
Components for Stainless Steel

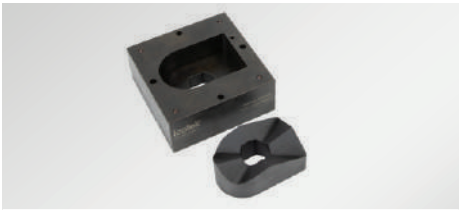
392 – 393

Round Punches
for Cut-Outs in PG and Metric Sizes,
for Steel, Aluminum

394 – 395

Round Punches
for Cut-Outs in PG and Metric Sizes,
for Stainless Steel

396 – 397



Punches CONFiX
for CONFiX Cable Conduit System
and KEL-FW Cable Entry,
for Steel, Aluminum, Stainless Steel

398 – 399

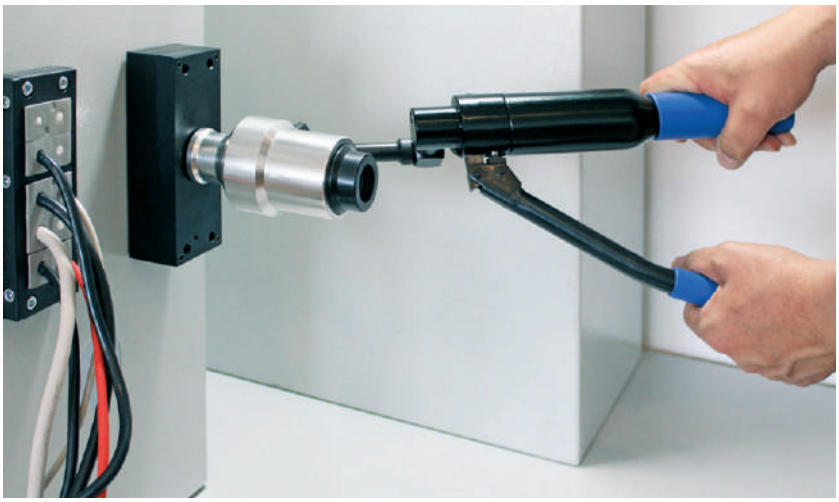
Useful Tools
for Measuring and Mounting

401

Punch Driver Sets
Hand Hydraulic Punch Driver and Metric Punches

The compact, lightweight hand hydraulic punch driver makes it easy to punch holes into stainless V2A steel, mild steel, aluminum or plastics with a max. sheet thickness of 3 mm (V2A: 2 mm), due to its high hydraulic force. The cylinder of the punch driver rotates 360° on 3 axles, so maximum flexibility even in hard-to-reach places is provided.

The punch driver can be used with all icotek punches and also with punches of other manufacturers.



Advantages & Benefits

- Maximum flexibility due to 360° head rotation
- High hydraulic force (60 kN, 8700 psi) for easy punching
- Compact, lightweight aluminum design (4.4 lb)
- Fast and easy operation
- Punch driver also suitable for punches by other manufacturers

Specifications

Material	Aluminum
Punching force	60 kN
Operating pressure	8700 psi

Accessories

Round punches	394 - 395
Rectangular & square punches	388 - 389

LIGHT

PRO 16-63

Punch Driver Sets
Hand Hydraulic Punch Driver and Metric Punches

Type	Scope of delivery	Order No.	PU
Punch driver set BASIC	1 hand hydraulic punch driver (weight: 2 kg) 1 draw stud for punches (steel) ø 9.5 mm (3/8" UNF) to ø 19 mm (3/4" UNF), L: 105 mm, M16 – M25 1 draw stud ø 19 mm (3/4" UNF), L: 125 mm, M32 – M85 1 spacer 1 tube lubricant 1 HSS co pilot drill (multi step drill) 1 robust plastic storage case	80000	1
Punch driver set PRO 16-32	1 hand hydraulic punch driver (weight: 2 kg) 1 draw stud for punches (steel) ø 9.5 mm (3/8" UNF) to ø 19 mm (3/4" UNF), L: 105 mm, M16 – M25 1 draw stud ø 19 mm (3/4" UNF), L: 125 mm, M32 – M85 1 spacer 1 tube lubricant 1 HSS co pilot drill (multi step drill) 1 each knockout punch for steel M16 | M20 | M25 | M32 1 robust plastic storage case	80005	1
Punch driver set PRO 16-63	1 hand hydraulic punch driver (weight: 2 kg) 1 draw stud for punches (steel) ø 9.5 mm (3/8" UNF) to ø 19 mm (3/4" UNF), L: 105 mm, M16 – M25 1 draw stud ø 19 mm (3/4" UNF), L: 125 mm, M32 – M85 1 spacer 1 tube lubricant 1 HSS co pilot drill (multi step drill) 1 each knockout punch for steel M16 | M20 | M25 | M32 | M40 | M50 | M63 1 robust plastic storage case	80006	1
Punch driver set PRO 16-63 for stainless steel	1 hand hydraulic punch driver (weight: 2 kg) 1 draw stud for punches (stainless steel) ø 11 mm, L: 105 mm, M16 – M25 1 draw stud ø 19 mm, L: 125 mm, M32 – M85 1 spacer 1 tube lubricant 1 HSS co pilot drill (multi step drill) 1 each knockout punch for stainless steel M16 | M20 | M25 | M32 | M40 | M50 | M63 1 robust plastic storage case	80072	1
Punch driver set LIGHT	1 hand hydraulic punch driver (weight: 2 kg) 1 draw stud for round punches for sheet steel, M16 | M20 | M25, ø 9.5 mm (3/8" UNF) to ø 19 mm (3/4" UNF), L: 105 mm, M16 – M25 1 draw stud for round punches for sheet steel and stainless steel V2A, ø 19 mm (3/4" UNF), L: 125 mm, M32 – M85 1 spacer, 1 robust plastic storage case	80003	1

Hydraulic Foot Pump

with hydraulic cylinder and accessories

Universally applicable single-stage foot pump with a fixed operating pressure of 450 bar and built-in pressure relief valve. Suitable for all icotek round punches, rectangular and square punches. Keeps your hands free to position the sheet metal punch precisely, especially when using larger sheet metal punches.

Type	Scope of delivery	Order No.	PU
Hydraulic foot pump	1 foot pump 2,5 m high pressure hose including quick coupling 1 hydraulic cylinder for holding round and rectangular punch 1 draw stud for round punch (steel) M16 – M25 1 draw stud for round punch (steel) M32 – M85 1 multi-step drill 1 spacer 1 tube of lubricant Note: storage case not included in delivery	80002	1

DIN-RC 1 | DIN-RC 2
Rail Cutters
for DIN Rails and Bus Bars

The DIN-RC 1 and DIN-RC 2 cutters cut various DIN rails and bus bars. The cut is clean and burr-free, there is no waste. The length stop with guiding device ensures that nothing slips during cutting and that the cut is always accurate to size.

DIN-RC 1 is suitable for cutting TS35 DIN rails 35 x 7.5 mm and 35 x 15 mm.

DIN-RC 2 is suitable for cutting TS35 DIN rails 35 x 7.5 mm and 35 x 15 mm, DIN rails 15 x 5.5 mm and bus bars 10 x 3 mm.

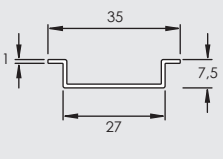
Advantages & Benefits

- Cuts the most common rails and bars
  DIN-RC 1: DIN rails 35 x 7.5 mm and 35 x 15 mm
  DIN-RC 2: DIN rails 35 x 7.5 mm, 35 x 15 mm and 15 x 5.5 mm as well as bus bars 10 x 3 mm
- Exact 90° cuts
- Burr-free cuts
- With length stop 1000 mm and guiding device

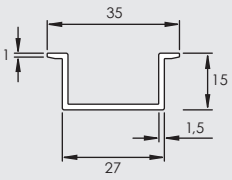
Type	Description	Order No.	PU
DIN-RC 1	Rail cutter for DIN rails with length stop 1000 mm	80189	1
DIN-RC 2	Rail cutter for DIN rails and bus bars with length stop 1000 mm	80190	1

DIN-RC 1

DIN-RC 1:

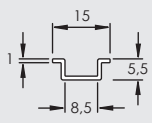


DIN rail 35 x 7.5 mm

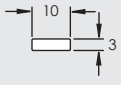


DIN rail 35 x 15 mm

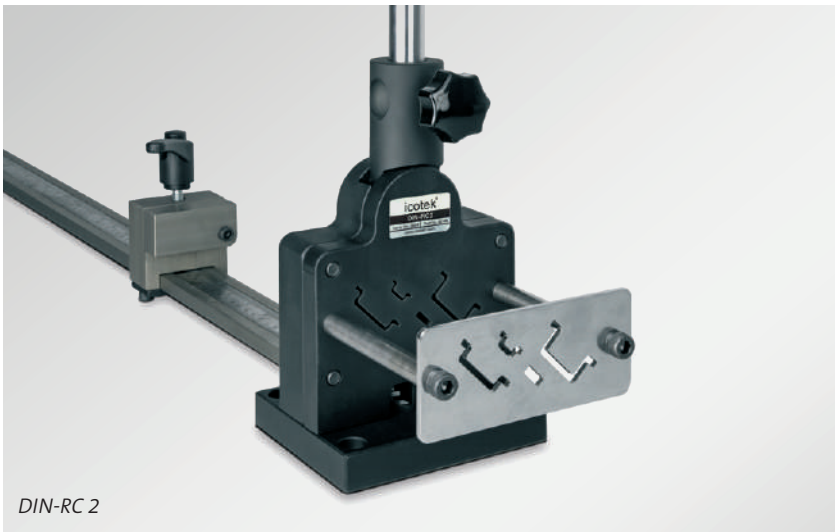
DIN-RC 2 additionally:



DIN rail 15 x 5.5 mm



Bus bar 10 x 3 mm



DIN-RC 2

Rectangular & Square Punches

Sized for Heavy Multi-Pin Industrial Connectors and icotek Cable Entry Systems for Steel and Aluminum

Rectangular and square punches and dies make it easy to punch holes into mild steel, aluminum or plastics with a max. sheet thickness of 2 mm. Available for cut-outs for the most common sizes of heavy industrial connectors and also for numerous special cut-outs.Therefore, the punches are suitable for most icotek cable entry systems. Center punches are integrated in the die for exact drilling of mounting holes.

The punches are for hydraulic operation only.

Advantages & Benefits

- Center punches for exact drilling of mounting holes
- Robust plastic storage case
- Suitable for hand hydraulic punch driver by icotek and other manufacturers

Specifications

Material Steel, hardened and burnished

Scope of Delivery

Punch, die, counter nut and draw stud, robust plastic storage case

Compatible with

Hydraulic punch driver	384 - 385
Hydraulic Foot Pump	386

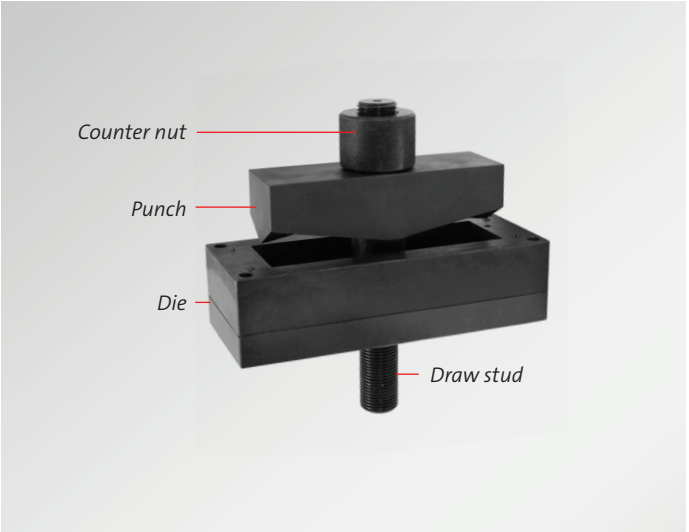
Complete set

Type	Cut-out size
Punch E1	21 × 27 mm
Punch E2	24 x 43 mm
Punch E3	24 x 65 mm
Punch E4	24 x 86 mm
Punch E5	24 x 112 mm
Punch 6	36 x 52 mm
Punch B	46 x 46 mm
Punch 10	36 x 65 mm
Punch 16	36 x 86 mm
Punch 24	36 x 112 mm
Punch 24-XL	46 x 112 mm
Punch 24-E * | **	66 x 112 mm
Punch KEA	56 x 112 mm

* Storage case not included in delivery
** Only to be used with hydraulic foot pump (order no. 80002).

Compatible spare parts

Max. sheet thickness	For cut-out of connector	With center punch (number)	Order No.	PU	Draw stud Order No.	Counter nut Order No.	Centre punch Order No.
2 mm	–	–	80075	1	80205	80227	–
2 mm	–	2	80055	1	80226	80211	80065
2 mm	–	2	80056	1	80226	80211	80065
2 mm	–	2	80057	1	80226	80211	80065
2 mm	–	2	80058	1	80226	80211	80065
2 mm	6-pin	4	80062	1	80209	80211	80065
2 mm	–	4 –	80049 80050	1	80209	80211	80065 –
2 mm	10-pin	4	80051	1	80209	80211	80065
2 mm	16-pin	4	80052	1	80209	80211	80065
2 mm	24-pin	4	80053	1	80209	80211	80065
2 mm	24-pin	4	80054	1	80209	80211	80065
2 mm	32-pin	–	80061	1	80209	80211	–
2 mm	–	4	80101	1	80209	80211	80065



Rectangular & Square Punches
for Steel and Aluminum in Special Sizes

The special size sheet metal punches can be used for cut-outs such as appliance fan cut-outs as well as custom cut-outs. Other special sizes are available on request.

Centre punches are integrated in the die for exact drilling of mounting holes. For max. 2 mm sheet steel, aluminium and plastic. The punches are for hydraulic operation only.

Advantages & benefits

- Centre punches for exact drilling of mounting holes
- Robust plastic storage case
- Suitable for hand hydraulic punch driver by icotek and other manufacturers

Specifications

Material Steel, hardened and burnished

Scope of delivery

Punch, die, counter nut and draw stud, robust plastic storage case

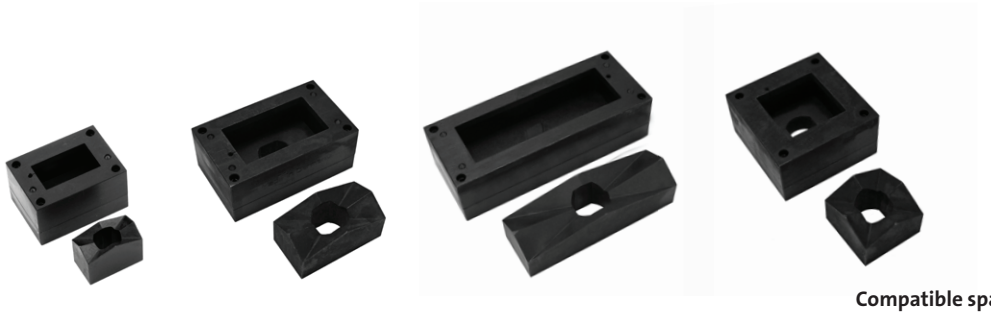
Compatible with

Hydraulic punch driver	384 - 385
Hydraulic Foot Pump	386

* Storage case not included in delivery
** Only to be used with hydraulic foot pump (order no. 80002)
*** Order numbers 80213 and 80214 are required

Complete set

Type	Cut-out size
Punch 68x68 **	68 x 68 mm
Punch 92x92 **	92 x 92 mm
Punch 125x125 * | **	125 x 125 mm
Punch 138 x 138 * | **	138 x 138 mm
Punch SUB-D9-pin	–
Punch 12,7 x 12,7	12,7 x 12,7 mm
Punch D 15,4 x 14,5	15,4 x 14,5 mm one side flattened to 14,5 mm
Punch 15,8 x 15,8	15,8 x 15,8 mm
Punch D 16,4 x 15,3	16,4 x 15,3 mm one side flattened to 15,3 mm
Punch 17 x 19	17 x 19 mm
Punch 19,1 x 19,1	19,1 x 19,1 mm
Punch 21,3 x 21,3	21,3 x 21,3 mm
Punch 22 x 30	22 x 30 mm
Punch 22 x 42	22 x 42 mm
Punch 22 x 45	22 x 45 mm
Punch 22,2 x 22,2	22,2 x 22,2 mm
Punch 24 x 24	24 x 24 mm
Punch 24 x 57	24 x 57 mm
Punch 25 x 50	25 x 50 mm
Punch 25,4 x 25,4	25,4 x 25,4 mm
Punch 32 x 90	32 x 90 mm
Punch 45 x 92	45 x 92 mm
Punch 46 x 92	46 x 92 mm
Punch 50,8 x 50,8	50,8 x 50,8 mm
Punch 65 x 113 * | **	65 x 113 mm
Punch 68 x 138 * | **	68 x 138 mm
Punch 71 x 29	71 x 29 mm
Punch 73 x 24	73 x 24 mm
Punch 91 x 117 * | **	91 x 117 mm



Compatible spare parts

Max. sheet thickness	For cut-out of connector	With center punch (number)	Order No.	PU	Draw stud Order No.	Counter nut Order No.	Center punch Order No.
2 mm	–	–	80064	1	80209	80211	–
2 mm	–	–	80060	1	80209	80211	–
2 mm	–	–	80063***	1	80213	80214	–
2 mm	–	–	80086	1	80213	80214	–
2 mm	SUB-D 9-pin	–	80073	1	80228	80229	–
2 mm	–	–	80079	1	80228	80229	–
2 mm	–	–	80220	1	80228	80229	–
2 mm	–	–	80080	1	80228	80229	–
2 mm	–	–	80222	1	80228	80229	–
2 mm	–	–	80087	1	80228	80229	–
2 mm	–	–	80081	1	80205	80227	–
2 mm	–	2	80082	1	80205	80227	80232
2 mm	–	–	80088	1	80205	80227	–
2 mm	–	–	80089	1	80205	80227	–
2 mm	–	–	80059	1	80205	80227	–
2 mm	HAN 3A	2	80067	1	80205	80227	80232
2 mm	–	–	80083	1	80205	80227	–
2 mm	–	4	80223	1	80226	80211	80065
2 mm	–	–	80091	1	80231	80227	–
2 mm	–	–	80084	1	80205	80227	–
2 mm	–	–	80159	1	80226	80211	–
2 mm	–	–	80092	1	80209	80211	–
2 mm	–	–	80093	1	80209	80211	–
2 mm	–	–	80085	1	80209	80211	–
2 mm	–	–	80074	1	80209	80211	–
2 mm	–	–	80094	1	80213	80214	–
2 mm	–	–	80161	1	80226	80211	–
2 mm	–	4	80224	1	80226	80211	80065
2 mm	–	–	80066	1	80209	80211	–

Rectangular & Square Punches

Sized for Heavy Multi-Pin Industrial Connectors and icotek Cable Entry Systems for Stainless Steel

Rectangular and square punches and dies make it easy to punch holes into stainless steel (V2A versions) with a max. sheet thickness of 2 mm. Available for cut-outs for the most common sizes of heavy industrial connectors and also for numerous special cut-outs.Therefore, the punches are suitable for most icotek cable entry systems. Center punches are integrated in the die for exact drilling of mounting holes.

The punches are for hydraulic operation only.

Advantages & Benefits

- Center punches for exact drilling of mounting holes
- Robust plastic storage case
- Suitable for hand hydraulic punch driver by icotek and other manufacturers

Specifications

Material Steel, hardened and burnished

Scope of Delivery

Punch, die, counter nut and draw stud, robust plastic storage case

Compatible with

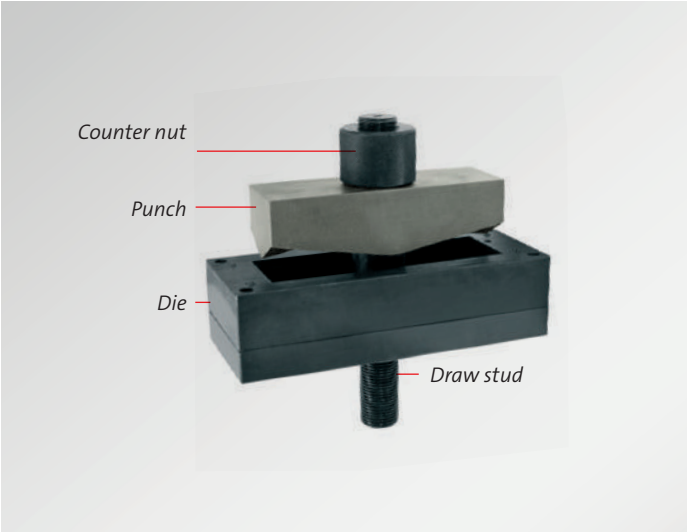
Hydraulic punch driver	384 - 385
Hydraulic Foot Pump	386

Complete set

Type	Cut-out size
Punch 6 for stainless steel V2A	36 x 52 mm
Punch B for stainless steel V2A	46 x 46 mm
Punch 10 for stainless steel V2A	36 x 65 mm
Punch 16 for stainless steel V2A	36 x 86 mm
Punch 24 for stainless steel V2A	36 x 112 mm
Punch 24-XL for stainless steel V2A	46 x 112 mm
Punch KEA for stainless steel V2A	112 x 56 mm
Punch 22,2 x 22,2 for stainless steel V2A	22,2 x 22,2 mm

Compatible spare parts

Max. sheet thickness	For cut-out of connector	With center punch (number)	Order No.	PU	Draw stud Order No.	Counter nut Order No.	Center punches Order No.
2 mm	6-pin	4	80149	1	80209	80211	80065
2 mm	–	4	80150	1	80209	80211	80065
2 mm	10-pin	4	80151	1	80209	80211	80065
2 mm	16-pin	4	80152	1	80209	80211	80065
2 mm	24-pin	4	80153	1	80209	80211	80065
2 mm	24-pin	4	80154	1	80209	80211	80065
2 mm	–	4	80225	1	80209	80211	80065
2 mm	HAN 3A	3	80148	1	80205	80227	80232



Round Punches
for Steel and Aluminum, for Cut-Outs PG & M16 – M85

Punch set M16 - M63
Order No. 80007

Self-centering knockout punches for mild steel, aluminum and plastic walls. Punches available for cut-outs PG 16, M16, M20, M25, M32, M40, M50, M63, M75 and M85. Cut-outs for icotek split cable glands and round cable entry plates can be punched.

The special cutting geometry of the punch reduces the cutting pressure and therefore the required effort. The punch splits slugs into several pieces (type related)* for easy slug removal. For installation of round switches icotek offers a PG 16 punch with an integrated 3 mm twist protection notch.

The punches are designed for manual and hydraulic operation.

Advantages & Benefits

- Multiple splitting punches for easier slug removal/ for easy punching
- Suitable with hand hydraulic punch driver by icotek or other manufacturers

Specifications

Material Steel, hardened and burnished

Compatible with

Hydraulic punch driver 384 - 385

*Except punches M75/M85

Complete set

Type	Cut-out size ø
Punch Set M16 – M63	16,2 – 63,5 mm
Punch M16	16,2 mm
Punch M20	20,4 mm
Punch M25	25,4 mm
Punch M32	32,5 mm
Punch M40	40,5 mm
Punch M50	50,5 mm
Punch M63	63,5 mm
Punch M75	75,5 mm
Punch M80	80 mm
Punch M85	86 mm
Punch 22	22 mm
Punch Set PG 7 – PG 48; 30,5 mm	12,5 – 59,3 mm
Punch PG 11	18,6 mm
Punch PG 13 (M20)	20,4 mm
Punch PG 16	22,5 mm
Punch PG 16 with twist protection notch	22,5 mm + 3 mm notch
Punch PG 21	28,3 mm

Note: More PG sizes are available on request.

3-fold slug splitting

Compatible spare parts

Max. sheet thickness	Thread Ø	Order No.	PU	Draw stud Order No.	Counter nut Order No.
M16 – M25: 2,0 mm M32 – M63: 2,5 mm	9,5 mm/19 mm	80007	1	80200 80201	–
2 mm	9,5 mm	80020	1	80200	–
2 mm	9,5 mm	80021	1	80200	–
2 mm	9,5 mm	80022	1	80200	–
3 mm	19 mm	80023	1	80201	–
3 mm	19 mm	80024	1	80201	–
3 mm	19 mm	80025	1	80201	–
3 mm	19 mm	80026	1	80201	–
2,5 mm	19 mm	80029	1	80201	–
2,5 mm	19 mm	80034	1	80201	–
2 mm	19 mm	80030	1	80201	–
2 mm	9,5 mm	80221	1	80201	–
2 mm – 9,5 mm; 2,5 mm – 19 mm	9,5 mm; 19 mm	80008	1	–	–
2 mm	9,5 mm	80160	1	80200	–
2 mm	9,5 mm	80021	1	80200	–
2 mm	9,5 mm	80027	1	80200	–
2 mm	9,5 mm	80028	1	80205	80227
2 mm	9,5 mm	80157	1	80200	–

Round Punches
for Stainless Steel, for Cut-Outs PG & M16 – M85

Self-centering knockout punches for stainless steel (V2A versions). Punches available for cut-outs PG 16, M16, M20, M25, M32, M40, M50, M63, M75 and M85. Cut-outs for icotek split cable glands and round cable entry plates can be punched.

The special cutting geometry of the punch reduces the cutting pressure and therefore the required effort. The punch splits slugs into two pieces for easy slug removal. For installation of round switches icotek offers a PG 16 punch with an integrated 3 mm twist protection notch.

The punches are designed for manual and hydraulic operation.

Advantages & Benefits

- Multiple splitting punches for easier slug removal/for easy punching
- Suitable with hand hydraulic punch driver by icotek or other manufacturers

Specifications

Material Steel, hardened and burnished

Scope of Delivery

Punch and die (without draw stud)

Compatible with

Hydraulic punch driver 384 - 385

Complete set

Type	Cut-out size ø
Punch Set M16 – M63, for stainless steel V2A, HSS co-drill, tube of lubricant	16,2 – 63,5 mm
Punch M16** for stainless steel V2A	16,2 mm
Punch M20** for stainless steel V2A	20,4 mm
Punch M25** for stainless steel V2A	25,4 mm
Punch M32 for stainless steel V2A	32,5 mm
Punch M40 for stainless steel V2A	40,5 mm
Punch M50 for stainless steel V2A	50,5 mm
Punch M63 for stainless steel V2A	63,5 mm
Punch M75 for stainless steel V2A	75 mm
Punch 43,2mm for stainless steel V2A	43,2 mm
Punch PG11 for stainless steel V2A	18,6 mm
Punch PG13 (M20) for stainless steel V2A	20,4 mm
Punch PG16 for stainless steel V2A	22,5 mm
Punch PG 16 with twist protection notch for stainless steel V2A	22,5 mm + 3 mm notch
Punch PG21 for stainless steel V2A	28,3 mm
Punch PG42 for stainless steel V2A	54 mm

**Draw stud (Order No. 80210) is required.

Note: More PG sizes are available on request.

2-fold slug splitting

				Compatible spare parts	
Max. sheet thickness	Thread Ø	Order No.	PU	Draw stud Order No.	Counter nut Order No.
2 mm	11,1 mm/19 mm	80070	1	80210 80201	–
2 mm	11,1 mm	80120	1	80210	–
2 mm	11,1 mm	80121	1	80210	–
2 mm	11,1 mm	80122	1	80210	–
2 mm	19 mm	80123	1	80201	–
2 mm	19 mm	80124	1	80201	–
2 mm	19 mm	80125	1	80201	–
2 mm	19 mm	80126	1	80201	–
2 mm	19 mm	80071	1	80201	–
2 mm	19 mm	80158	1	80201	–
2 mm	11,1 mm	80155	1	80210	–
2 mm	11,1 mm	80156	1	80210	–
2 mm	11,1 mm	80069	1	80210	–
1,5 mm	9,5 mm	80128	1	80205	80227
2 mm	19 mm	80031	1	80201	–
2 mm	19 mm	80032	1	80201	–

Punches CONFiX
for CONFiX Cable Conduit System and KEL-FW Cable Entry, for Steel, Aluminum, Stainless Steel

These punches can be used to punch the special cut-out shapes for the CONFiX bulkhead fittings.

In addition, the 80100 and 80194 punches can be used to punch the cut-outs for the KEL-FW cable entry.

For max. 2 mm stainless steel (V2A versions), sheet steel, aluminum and plastic.

The punches are suitable for the hand hydraulic punch driver and the hydraulic foot pump.

The punches are supplied with draw stud and counter nut in a transport case.

Advantages

- For the special cut-out shapes for CONFiX and KEL-FW
- High-quality padded transport case
- Suitable with hand hydraulic punch driver by icotek or other manufacturers

Specifications

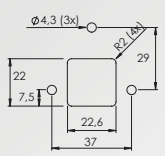
Material Steel, hardened and burnished

Compatible with

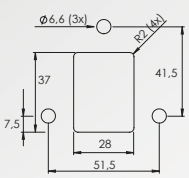
Hydraulic punch driver	384 - 385
Hydraulic Foot Pump	386

Complete set

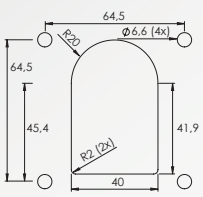
Type	Cut-out size
Punches for steel and aluminium	
Punch CONFiX	22,6 x 22 mm
Punch CONFiX	28 x 37 mm
Punch CONFiX	40 x 64,5 mm
Punch CONFiX	48,4 x 79,5 mm
Punch CONFiX*	83,25 x 60,5 mm
Punch KEL-FW*	62 x 86 mm
Punches for stainless steel V2A	
Punch CONFiX	22,6 x 22 mm
Punch CONFiX	28 x 37 mm
Punch CONFiX	40 x 64,5 mm
Punch CONFiX	48,4 x 79,5 mm
Punch CONFiX*	83,25 x 60,5 mm
Punch KEL-FW*	62 x 86 mm



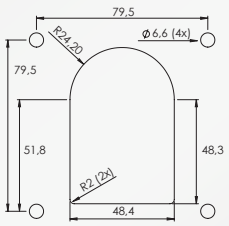
CONFiX: 80095, 80195



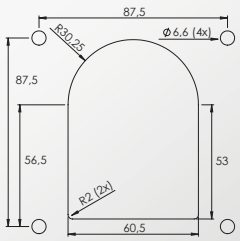
80096, 80196



80097, 80197

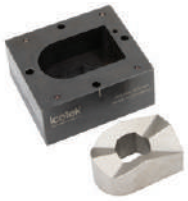


80098, 80198

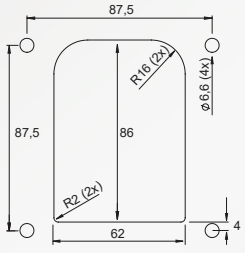


80099, 80199**

* Only to be used with hydraulic foot pump (order no. 80002).



Max. sheet thickness	Suitable for	With center punch (number)	Order No.	PU	Compatible spare parts		
					Draw stud Order No.	Counter nut Order No.	Center punches Order No.
2 mm	FWS-A 16 FWS-A 20 FWS-B 11 FWS-B 16	3	80095	1	80205	80227	80232
2 mm	FWS-A 25 FWS-B 21	3	80096	1	80205	80227	80232
2 mm	FWS-A 32 FWS-B 29	4	80097	1	80209	80211	80065
2 mm	FWS-A 40 FWS-B 36	4	80098	1	80209	80211	80065
2 mm	FWS-A 50 FWS-B 48	4	80099	1	80209	80211	80065
2 mm	KEL-FW B1 KEL-FW B4	4	80100	1	80209	80211	80065
2 mm	FWS-A 16 FWS-A 20 FWS-B 11 FWS-B 16	3	80195	1	80205	80227	80232
2 mm	FWS-A 25 FWS-B 21	3	80196	1	80205	80227	80232
2 mm	FWS-A 32 FWS-B 29	4	80197	1	80209	80211	80065
2 mm	FWS-A 40 FWS-B 36	4	80198	1	80209	80211	80065
2 mm	FWS-A 50 FWS-B 48	4	80199	1	80209	80211	80065
2 mm	KEL-FW B1 KEL-FW B4	4	80194	1	80209	80211	80065



KEL-FW: *80100*, 80194**

Accessories
for Punches

Draw studs

Type	Compatible for	Order No.	PU
Draw stud	for rectangular punch D = 19 mm, Length: 135 mm	80209	1
Draw stud	for rectangular punch, one side flattened D = 13 mm, d = 11 mm, Length: 105 mm	80205	1
Draw stud	for rectangular punch, two sides flattened Order No. 80063, 80086	80213	1
Draw stud	for rectangular punch 19 x 14 x 130 mm, two sides flattened	80226	1
Draw stud	for rectangular punch 9,5 x 8,25 x 105 mm, one side flattened	80228	1
Draw stud	for rectangular punch, Order No. 80091 16 x 14,5 x 110 mm	80231	1
Draw stud	for round punch (steel) M16 – M25 d = 9,5 mm; D = 19 mm; L = 105 mm	80200	1
Draw stud	for round punch (steel and stainless steel V2A) M32 – M85, D = 19 mm; L = 125 mm	80201	1
Draw stud	for round punch M16, M20, M25 (steel and stainless steel V2A) with adapter 11,1 x 19,0 mm, L = 105 mm	80210	1

For manual operation

Type	Compatible for	Order No.	PU
Ball bearing mounted pressure screw	for round punch M16 – M25, screw 9,5 x 50 mm, UNF 3/8 thread	80217	1
Ball bearing mounted pressure screw	for round punch M32 – M40, screw 19 x 55 mm UNF 3/4 thread	80218	1
Ball bearing mounted pressure screw	for round punch M50, screw 19 x 75 mm UNF 3/4 thread	80219	1
Pressure nut with ball bearing	1/2 UNF	80207	1
Pressure nut with ball bearing	3/8 UNF	80230	1

Counter nuts

Type	Compatible for	Order No.	PU
Counter nut	1/2 UNF	80206	1
Counter nut	for rectangular punch 125 x 125 mm Order No. 80063, 80086	80214	1
Counter nut	3/4 UNF	80211	1
Counter nut	3/8 UNF	80229	1

Center punches

Type	Compatible for	small | large	Order No.	PU
Center punches	Rectangular punches	large	80065	1
Center punches	80082, 80095, 80096, 80148	small	80232	1

Other accessories

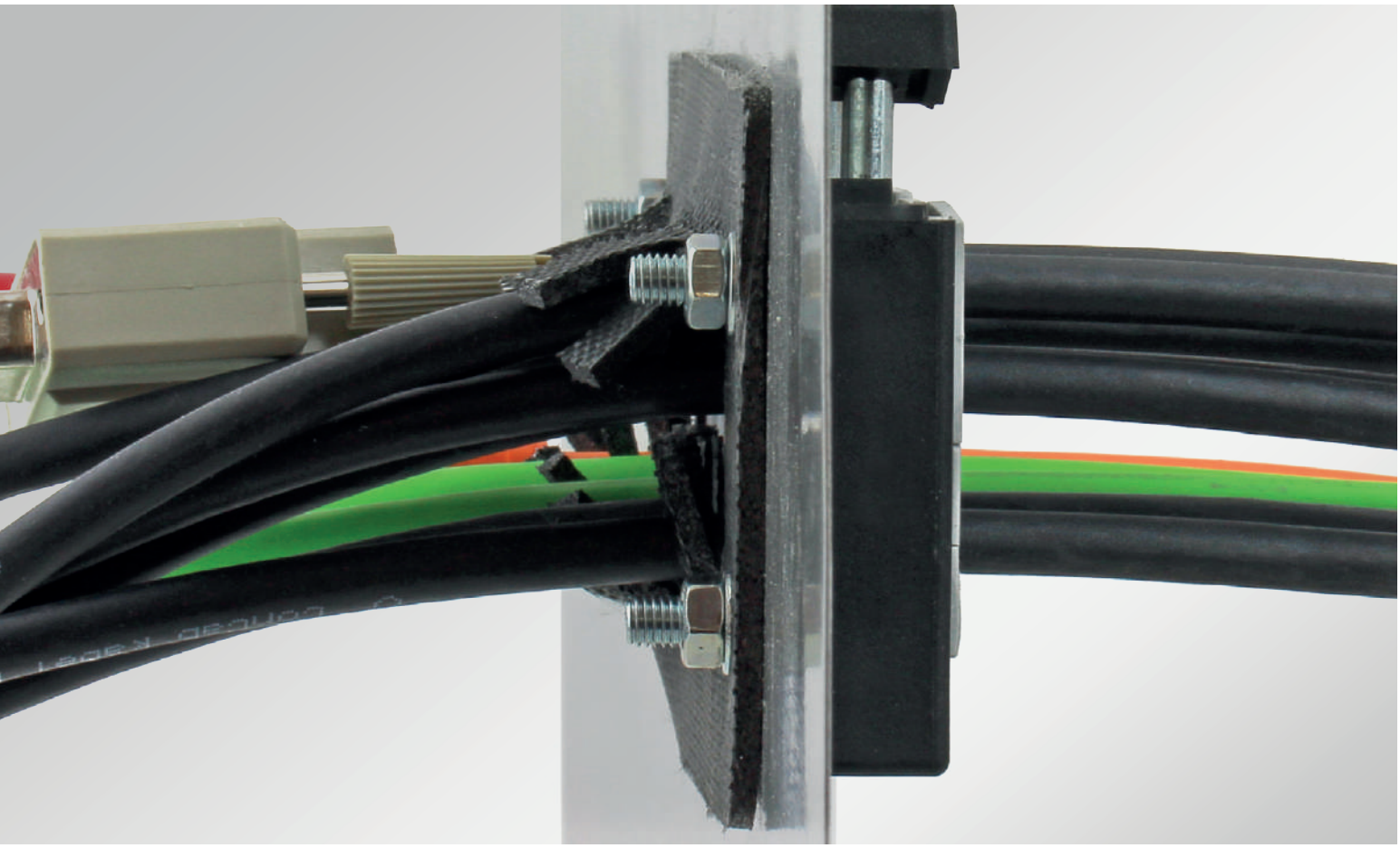
Type	Compatible for	Order No.	PU
Multi-stage drill (stages 8.0 mm/10.0 mm/ 11.5 mm/12.5 mm/14.5 mm/ 17.0 mm/21.0 mm)	HSS co-drill	80204	1
Adapter	3/4 to 1/2 UNF	80208	1
Adapter	3/4 to 3/8 UNF	80234	1
Tube of lubricant		80203	1

KMS
Cable Template

Description	Order No.	PU
Cable template	39800	1

The correct size of the KT grommets can easily be determined by using the cable template

- Determining the diameter of the cable using the cable template
- Selecting the KT grommets according to the data on the cable template



HL3 EN 45545-2 | E45 EI30 EN 45545-3 | JAPAN RAILWAY TESTED FLAME RETARDANT | c UL us | IP68

UL TYPE 12 | UL TYPE 4X | RoHS compliant | Made in Germany | UV ISO 4892-2A

Cable Entry Systems
with IFPS Fire Penetration Seals Acc. to EN 45545-3

Fire Resistance of Fire Barriers

The European railroad standard for fire safety EN 45545-3 regulates the fire resistance of fire barriers. The requirements and measures defined in this part of the standard aim to protect passengers and staff in railroad vehicles against onboard fire incidents.

Fire barriers can have different standards:

The lowest standard „E“

Barrier against flames, preventing fissure formation. „E45“, for example, means that the specimen can withstand the test for 45 minutes.

The highest standard „EI“

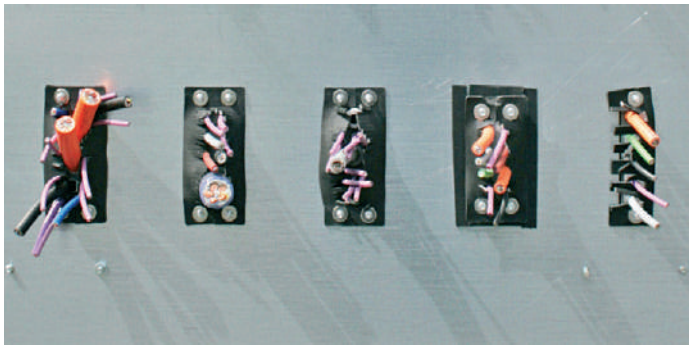
Barrier against flames, preventing fissure formation and thermal insulation, which means that the temperature on the side facing away from the fire must not exceed 200° C (180° K above room temperature). „EI30“, for example, means that the specimen can withstand the test for 30 minutes.

Based on the standards EN 45545-3 and EN 1363-1 icotek cable entry systems have been tested on „E“ and „EI“ in vertical alignment using mounted IFPS fire penetration seals. All tested products have been successfully certified using only one layer of fire penetration seals.

icotek cable entry systems meet the classifications E45 and EI30!

The cable entry frames and grommets manufactured by icotek have undergone flammability testing for railway vehicle materials by the Japan Railway Vehicle Machinery Engineering Association, and have been certified as "flame retardant".

Fire penetration seals facing the fire side:



before

after

Cable Entry Systems
with IFPS Fire Penetration Seals According to EN 45545-3

icotek cable entry frames and plates with fire penetration seals, approved for use in railway technology (meeting the standards EN 45545-2, EN 45545-3 and EN 1363-1).

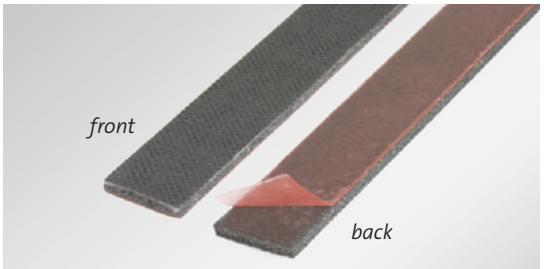
The intumescent (foaming) IFPS fire penetration seals which are mounted at the backside of the cable entry components consist of expandable graphite and increase their volume by a multiple in case of a fire.

This creates a barrier which prevents a penetration of flames and high heat from one room into another for the longest possible period.

Advantages & benefits

- Approved for use in railway technology (EN 45545-2, EN 45545-3 and EN 1363-1)
- Easy assembly
- High cable density
- Only one fire penetration seal per cable entry component required
- Large product variety
- Up to IP66/UL Type 4X, depending on the cable entry
- High classifications E45/EI30

Type	Order No.	Order No. with V2A screws	Cut-out	Grommets KT small | large	IP Ingress protection	PU
KEL-U 24|4-BS	99300.001	99300.201	36 × 112 / 1.417 - 4.409"	2|2	IP54	5
KEL-U 24|7-BS	99300.002	99300.202	36 × 112 / 1.417 - 4.409"	6|1	IP54	5
KEL-U 24|10-BS	99300.003	99300.203	36 × 112 / 1.417 - 4.409"	10|-	IP54	5
KEL-U 16|2-BS	99301.001	99301.201	36 × 86 / 1.417- 3.386"	-|2	IP54	5
KEL-U 16|5-BS	99301.002	99301.202	36 × 86 / 1.417- 3.386"	4|1	IP54	5
KEL-U 16|8-BS	99301.003	99301.203	36 × 86 / 1.417- 3.386"	8|-	IP54	5
KEL-U 10|6-BS	99306.001	99306.201	36 × 65 / 1.417- 2.56"	6|-	IP54	5
KEL-U 10|3-BS	99306.002	99306.202	36 × 65 / 1.417- 2.56"	2|1	IP54	5
KEL-U-B1-BS	99305.001	99305.201	46 × 46 / 1.81 - 1.81"	-|1	IP54	5
KEL-U-B4-BS	99305.002	99305.202	46 × 46 / 1.81 - 1.81"	4|-	IP54	5
KEL-ER 24|4-BS	99300.004	99300.204	36 × 112 / 1.417 - 4.409"	2|2	IP65/IP66	5
KEL-ER 24|7-BS	99300.005	99300.205	36 × 112 / 1.417 - 4.409"	6|1	IP65/IP66	5
KEL-ER 24|10-BS	99300.006	99300.206	36 × 112 / 1.417 - 4.409"	10|-	IP65/IP66	5
KEL-ER 16|2-BS	99301.004	99301.204	36 × 86 / 1.417- 3.386"	-|2	IP65/IP66	5
KEL-ER 16|5-BS	99301.005	99301.205	36 × 86 / 1.417- 3.386"	4|1	IP65/IP66	5
KEL-ER 16|8-BS	99301.006	99301.206	36 × 86 / 1.417- 3.386"	8|-	IP65/IP66	5
KEL-ER 10|6-BS	99306.003	99306.203	36 × 65 / 1.417- 2.56"	6|-	IP65/IP66	5
KEL-ER 10|3-BS	99306.004	99306.204	36 × 65 / 1.417- 2.56"	2|1	IP65/IP66	5
KEL-ER B1-BS	99305.003	99305.203	46 × 46 / 1.81 - 1.81"	-|1	IP65/IP66	5
KEL-ER B4-BS	99305.004	99305.204	46 × 46 / 1.81 - 1.81"	4|-	IP65/IP66	5
KEL-E5-BS	99302.001	99302.201	24 × 112 / 0.94 - 4.409"	5|-	IP54	5
KEL-E4-BS	99309.001	99309.201	24 × 86 / 0.94 - 3.386"	4|-	IP54	5
KEL-E3-BS	99308.001	99308.201	24 × 65 / 0.94 - 2.56"	3|-	IP54	5
KEL-E2-BS	99307.001	99307.201	24 × 43 / 0.94 - 1.69"	2|-	IP54	5
KEL-ER-E5-BS	99302.002	99302.202	24 × 112 / 0.94 - 3.386"	5|-	IP65/IP66	5
KEL-ER-E4-BS	99309.002	99309.202	24 × 86 / 0.94 - 3.386"	4|-	IP65/IP66	5
KEL-ER-E3-BS	99308.002	99308.202	24 × 65 / 0.94 - 2.56"	3|-	IP65/IP66	5
KEL-ER-E2-BS	99307.002	99307.202	24 × 43 / 0.94 - 1.69"	2|-	IP65/IP66	5



Also available: IFPS fire penetration seal stripe, 900 x 17 x 2.7 mm, self-adhesive
Order No. 99303

* 4X for indoor use only
** The cable entry must be installed with a fire penetration seal.

Cable Entry Systems
with IFPS Fire Penetration Seals According to EN 45545-3

Specifications

Cable entry comp.	See standard products
Fire penetration seal	Intumescent (foaming)
Material	Graphite (C)

Scope of delivery

Each 1 cable entry frame/plate + suitable fire penetration seal.

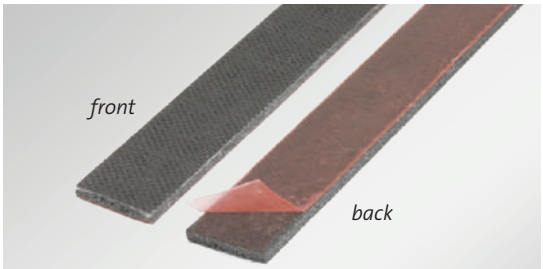
Suitable grommets are not included in the shipment and have to be ordered separately.

Type	Order No.	Cut-out	IP Ingress protection	PU
KEL-DPU 24|13-BS gy	99300.010	36 × 112 / 1.417 x 4.409"	IP66/IP68	5
KEL-DPU 24|14-BS gy	99300.011	36 × 112 / 1.417 x 4.409"	IP66/IP68	5
KEL-DPU 24|16-BS gy	99300.012	36 × 112 / 1.417 x 4.409"	IP66/IP68	5
KEL-DPU 24|16-1-BS gy	99300.013	36 × 112 / 1.417 x 4.409"	IP66/IP68	5
KEL-DPU 24|17-BS gy	99300.014	36 × 112 / 1.417 x 4.409"	IP66/IP68	5
KEL-DPU 24|20-BS gy	99300.015	36 × 112 / 1.417 x 4.409"	IP66/IP68	5
KEL-DPU 24|21-BS gy	99300.016	36 × 112 / 1.417 x 4.409"	IP66/IP68	5
KEL-DPU 24|32-BS gy	99300.017	36 × 112 / 1.417 x 4.409"	IP66/IP68	5
KEL-DPZ 16|11-BS gy	99301.007	36 × 86 / 1.417 x 3.386"	IP65/IP66	5
KEL-DPZ 16|14-BS gy	99301.008	36 × 86 / 1.417 x 3.386"	IP65/IP66	5
KEL-DPZ 16|20-BS gy	99301.009	36 × 86 / 1.417 x 3.386"	IP65/IP66	5
KEL-DPZ 16|25-BS gy	99301.010	36 × 86 / 1.417 x 3.386"	IP65/IP66	5
KEL-DPZ 16|34-BS gy	99301.011	36 × 86 / 1.417 x 3.386"	IP65/IP66	5
KEL-DPZ 24|14-BS gy	99300.018	36 × 112 / 1.417 x 4.409"	IP65/IP66	5
KEL-DPZ 24|15-BS gy	99300.019	36 × 112 / 1.417 x 4.409"	IP65/IP66	5
KEL-DPZ 24|16-BS gy	99300.020	36 × 112 / 1.417 x 4.409"	IP65/IP66	5
KEL-DPZ 24|17-BS gy	99300.021	36 × 112 / 1.417 x 4.409"	IP65/IP66	5
KEL-DPZ 24|25-BS gy	99300.022	36 × 112 / 1.417 x 4.409"	IP65/IP66	5
KEL-DPZ 24|32-BS gy	99300.023	36 × 112 / 1.417 x 4.409"	IP65/IP66	5
KEL-DPZ 24|42-BS gy	99300.024	36 × 112 / 1.417 x 4.409"	IP65/IP66	5

Fire penetration seal (accessories)

Type	Order No.	Cut-out	PU
Fire penetration seal size 24	99300	36 × 112/1.42 x 4.41"	1
Fire penetration seal size 16	99301	36 × 86/1.42 x 3.39"	1
Fire penetration seal size 10	99306	36 × 65 mm/1.42 x 2.56"	1
Fire penetration seal size B	99305	46 × 46 mm/1.81 x 1.81"	1
Fire penetration seal size E5	99302	24 × 112 mm/0.94 x 4.41"	1
Fire penetration seal size E4	99309	24 × 86 mm/0.94 x 3.39"	1
Fire penetration seal size E3	99308	24 × 65 mm/0.94 x 2.56"	1
Fire penetration seal size E2	99307	24 × 43 mm/0.94 x 1.69"	1
Fire penetration seal size KEL 183 ***	99311	180 x 80 mm/7.087 x 3.15"	1
Fire penetration seal size 24-MT ***	99312	82 x 112 mm/3.23 x 4.41"	1
Fire penetration seal size 16-MT ***	99314	82 x 86 mm/3.23 x 3.39"	1
Fire penetration seal for KEL-DPZ-KX/KL72 ***	99315	62 x 192 mm/2.44 x 7.56"	1

* 4X for indoor use only
** The cable entry must be installed with a fire penetration seal.
*** At the time of certification, these sizes were not yet part of our product portfolio.



Also available: IFPS fire penetration seal stripe, 900 x 17 x 2.7 mm, self-adhesive
Order No. 99303

10

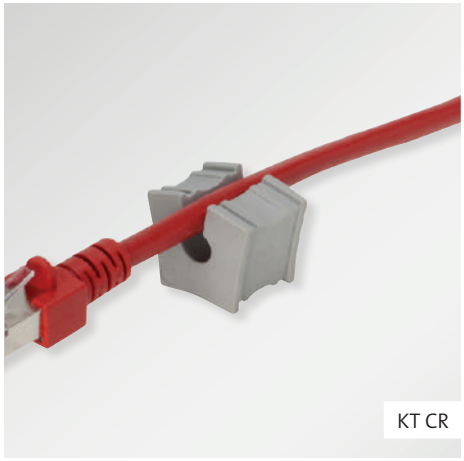
EN ISO 14644 · ECOLAB certified · c UL us · IP66 · IP68 · UL TYPE 12 · UL TYPE 4X

DNV · HL3 EN 45545-2 · E45 EI30 EN 45545-3 · EN 61373 · PNEUMATICS · UV ISO 4892-2A · RoHS compliant

Cable Entry Systems
for the Use in Cleanrooms

KEL-ER CR

KEL-U CR


KT CR

KEL-DPZ CR

KEL-DPZ CR

KEL-DPZ-HD CR

10 Cable Entry Systems
for the Use in Cleanrooms

A cleanroom is a room that has an extremely low concentration of airborne particles. Airborne particles are all particles and substances that are suspended in the air and for the most part cannot be seen with the naked eye.

Such cleanrooms are needed wherever particles present in the ambient air would disrupt production. This is the case, for example, in medical technology, semiconductor production, microsystems technology, pharmaceuticals, aerospace technology or optics. Cleanrooms are also needed in medical research.

Cleanrooms are classified by classes according to ISO 14644-1 as per ISO 1 to 9. The individual cleanroom classes may only contain a certain number of particles of a specified size. The particle concentration is considered per m³ of air. ISO 1 contains the strictest specifications, for ISO 9 the lowest specifications.

In order to meet these strict requirements, materials specially researched or modified by icotek are required and used for the certified cleanroom products.

All icotek cable entry systems for the cleanroom tested and certified by the Fraunhofer IPA are suitable and certified for class 1 in accordance with ISO 14644-1.

For more information about products for the cleanroom, please contact us directly: pm@icotek.com

Cleanroom Classes According to ISO 14644-1 and Other Regulations

Regulatory				Limiting values of each air cleanliness class for differing particle sizes and reference volumes (acc. to ISO 14644-1)											
EG-GMP *in operation*	EG-GMP *at rest*	US Fed. Standard 209E*	DIN EN ISO 14644-1	0.1 µm		0.2 µm		0.3 µm		0.5 µm		1.0 µm		5.0 µm	
				per m³	per cbf	per m³	per cbf	per m³	per cbf	per m³	per cbf	per m³	per cbf	per m³	per cbf
			1	10	0,3										
			2	100	3	24	1	10	0,3						
			3	1.000	30	237	7	102	3	35	1				
		1		1.240	35	265	8	106	3	35	1				
			4	10.000	300	2.370	67	1.020	29	352	9,9	83	2		
		10		12.000	340	2.650	75	1.060	29	353	10				
			5	100.000	2.833	23.700	671	10.200	289	3.520	100	832	24	29	0,8
	A									3.520	100			20	0,6
A										3.520	100			20	0,6
	B									3.520	100			29	0,8
		100				26.500	750	10.600	300	3.530	100				
			6	1.000.000	28.329	237.000	6.710	102.000	2.890	35.200	997	8.320	235	293	8
		1.000								35.300	1.000			247	7
			7							352.000	9.972	83.200	2.357	2.930	83
B										352.000	9.972			2.900	82
	C									352.000	9.972			2.900	82
		10.000								353.000	10.000			2.470	70
			8							3.520.000	99.716	832.000	23.569	29.300	830
C										3.520.000	99.716			29.000	821
	D									3.520.000	99.716			29.000	821
		100.000								3.530.000	100.000			24.700	700
			9							35.200.000	997.167	8.320.000	235.694	293.000	8.300

Industries and Cleanliness Criteria

	Particle emission	Outgassing VOC / SVOC	Outgassing anions	Outgassing NH_3	ESD	Cleanability (Riboflavin test)	Chemical resistance	Biological resistance	Antibacterial activity	H_2O_2 absorption / desorption	Hygienic Design
Semiconductor industry	++	++	+	+	++	+	+	+	0	0	0
Electronic	++	+	+	+	++	0	0	0	0	0	0
Display (e.g. mobile phone)	++	+	0	0	++	0	0	0	0	0	0
Battery technology	++	0	0	0	++	0	0	0	0	0	0
Microsystem technology	++	+	0	0	++	+	+	+	0	0	0
Optic	+	++	+	+	+	+	+	+	0	0	0
Photovoltaic	+	+	0	0	+	0	0	0	0	0	0
Aerospace	++	++	+	+	++	+	+	+	+	0	0
Pharmacy	++	0	0	0	+	++	++	++	++	++	++
Biotechnology	+	+	0	0	0	++	++	++	++	+	++
Medical technology	+	0	0	0	+	++	++	++	++	+	++
Food technology	+	0	0	0	0	++	++	++	++	+	++
Hospital	0	0	0	0	0	++	++	++	++*)	+	++

LIFE-SCIENCE

++ mandatory | + recommended, but not mandatory | 0 generally not required but in individual cases recommended

*) depending on the subject

Source: Fraunhofer IPA

*4X for indoor use only

10 Cable Entry Systems
for the Use in Cleanrooms

Specially Designed for the Cleanroom

Not only the particle emissions are relevant but also the outgassing values VOC (Volatile Organic Compounds)/SVOC (Semivolatile Organic Compounds) of the products used in clean rooms. This applies in particular to the semiconductor, optics and aerospace industries.

In the ISO class, the air cleanliness classification works on the basis of the particulate concentration.

In the ISO-ACC class, air cleanliness works on the basis of chemical concentration. The chemical concentration can lead to a chemical contamination, which can have a damaging effect on the product or on the process.

Materials as well as cable entry systems are classified based on their chemical concentration.

ISO-ACCe Class (x) =
ISO-Air Cleanliness chemical concentration for equipment =
AMC Class Equipment

ISO-ACCm Class (x) =
ISO-Air Cleanliness chemical concentration for material =
AMC Class Material

The Fraunhofer IPA certified values that were in part no longer measurable in the ultra-trace range and thus excellent to very good values. The material-specific emission rate (= ISO-ACCm class) was determined. The smaller the ISO-ACCm class, the lower the material-specific emission rate.

The test certificates of the Fraunhofer IPA can be requested from icotek: pm@icotek.com

Decontamination with H_2O_2 vaporization

Cleanrooms must be cleaned of contamination with microorganisms, particles and pyrogens before each commissioning or after maintenance work. An effective method is cleaning by vaporizing hydrogen peroxide (H_2O_2). The hydrogen peroxide is converted into a gaseous state and the subsequent microcondensation results in optimum decontamination throughout the entire room and on all surfaces.

icotek has subjected its cable entry systems to the H_2O_2 cleaning process and can recommend its use. A declaration of conformity is available on request from product management: pm@icotek.com

Manual disinfection

icotek recommends cleaning products installed in cleanrooms with a mixture of 70% isopropanol and 30% distilled water.

Explanation of article numbers

The products with article ending **.600** are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1. The materials used for these products have been tested and certified for outgassing according to VOC/SVOC (ISO 14644-8; ISO 16000-6,-9,-11,-25, VDI 2083 sheet 17).

The products with the article ending **.601** are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1.

Split Cable Entry System
for Cables with Connectors

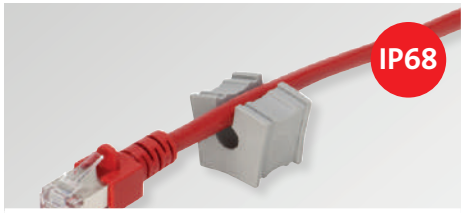
KEL-ER CR Series

412

Split Cable Entry System
for Cables with Connectors

KEL-U CR Series

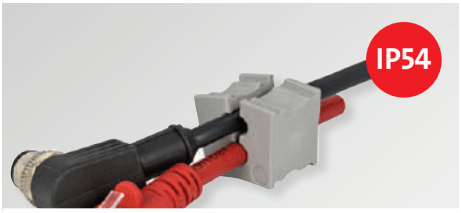
413



Grommets
Small, Single

KT CR

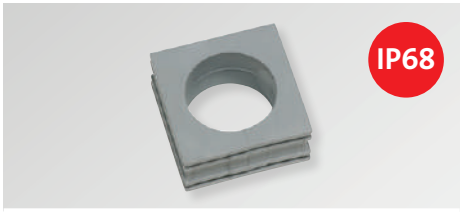
414



Grommets
Small, Multi

KT CR

415



Grommets
Large

KT CR

416

Cable Entry Plates

KEL-DPZ CR Series

417 – 419

Cable Entry Plates

KEL-DPZ Round CR Series

420

Cable Entry Plates
Hygienic Design Line

KEL-DPZ-HD CR

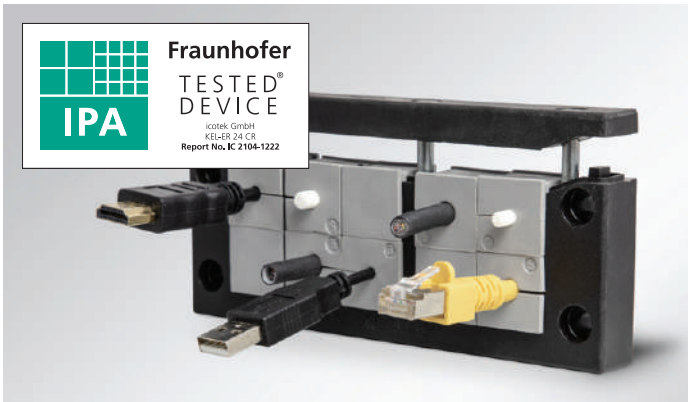
421

*4X for indoor use only

KEL-ER CR Series
Cable Entry Frames

Type	Cut-out mm	Grommets KT small | large	Order No. *	Order No. **	PU
KEL-ER 24 CR					
KEL-ER 24|10 CR	36/46 × 112	10 | –	48241.600	48241.601	5
KEL-ER 24|7 CR	36/46 × 112	6 | 1	48247.600	48247.601	5
KEL-ER 24|4 CR	36/46 × 112	2 | 2	48244.600	48244.601	5
KEL-ER 16 CR					
KEL-ER 16|8 CR	36/46 × 86	8 | –	48168.600	48168.601	5
KEL-ER 16|5 CR	36/46 × 86	4 | 1	48165.600	48165.601	5
KEL-ER 16|2 CR	36/46 × 86	– | 2	48162.600	48162.601	5
KEL-ER 10 CR					
KEL-ER 10|6 CR	36/46 × 65	6 | –	48216.600	48216.601	5
KEL-ER 10|3 CR	36/46 × 65	2 | 1	48212.600	48212.601	5
KEL-ER-B CR					
KEL-ER-B4 CR	46 × 46	4 | –	48204.600	48204.601	5
KEL-ER-B1 CR	46 × 46	– | 1	48206.600	48206.601	5
KEL-ER-E CR					
KEL-ER-E5 CR	112 × 24	5 | –	48250.600	48250.601	5
KEL-ER-E4 CR	112 × 24	4 | –	48259.600	48259.601	5
KEL-ER-E3 CR	65 × 24	3 | –	48258.600	48258.601	5
KEL-ER-E2 CR	43 × 24	2 | –	48249.600	48249.601	5

Split cable entry system for cables with connectors.
Detailed product description from page 10.



* The products with article ending .600 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1. The materials used for these products have been tested and certified for outgassing according to VOC/SVOC (ISO 14644-8; ISO 16000-6,-9,-11,-25, VDI 2083 sheet 17).

** The products with the article ending .601 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1.

*4X for indoor use only

KEL-U CR Series
Cable Entry Frames

Type	Cut-out mm	Grommets KT small | large	Order No. *	Order No. **	PU
KEL-U 24 CR					
KEL-U 24|10 CR	36/46 × 112	10 | –	54241.600	54241.601	5
KEL-U 24|7 CR	36/46 × 112	6 | 1	54247.600	54247.601	5
KEL-U 24|4 CR	36/46 × 112	2 | 2	54244.600	54244.601	5
KEL-U 16 CR					
KEL-U 16|8 CR	36/46 × 86	8 | –	54168.600	54168.601	5
KEL-U 16|5 CR	36/46 × 86	4 | 1	54165.600	54165.601	5
KEL-U 16|2 CR	36/46 × 86	– | 2	54162.600	54162.601	5
KEL-U 10 CR					
KEL-U 10|6 CR	36/46 × 65	6 | –	54216.600	54216.601	5
KEL-U 10|3 CR	36/46 × 65	2 | 1	54212.600	54212.601	5
KEL-U-B CR					
KEL-U-B4 CR	46 × 46	4 | –	54204.600	54204.601	5
KEL-U-B1 CR	46 × 46	– | 1	54206.600	54206.601	5

Split cable entry system for cables with connectors.
Detailed product description from page 10.

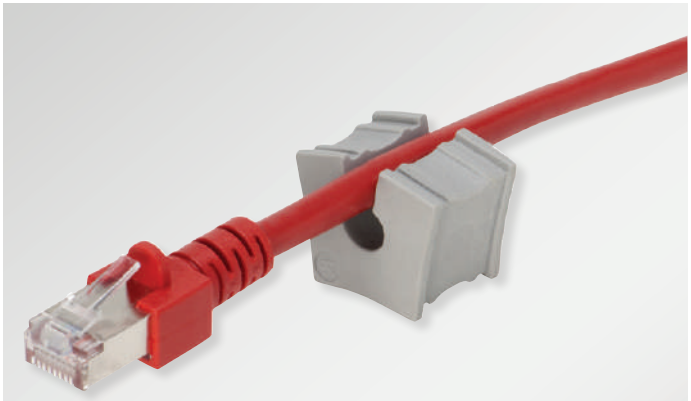
* The products with article ending .600 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1. The materials used for these products have been tested and certified for outgassing according to VOC/SVOC (ISO 14644-8; ISO 16000-6,-9,-11,-25, VDI 2083 sheet 17).

** The products with the article ending .601 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1.

KT CR
Grommets, Small, Single

Description	Type	Clamping range	Order No. * gray	Order No. ** gray	PU
BTK	BTK CR	Blank grommet	41251.600	41251.601	10
KT small	KT 1 CR	1 – 2 mm	39941.600	39941.601	10
	KT 2 CR	2 – 3 mm	39934.600	39934.601	10
	KT 3 CR	3 – 4 mm	41203.600	41203.601	10
	KT 4 CR	4 – 5 mm	41204.600	41204.601	10
	KT 5 CR	5 – 6 mm	41205.600	41205.601	10
	KT 6 CR	6 – 7 mm	41206.600	41206.601	10
	KT 7 CR	7 – 8 mm	41207.600	41207.601	10
	KT 8 CR	8 – 9 mm	41208.600	41208.601	10
	KT 9 CR	9 – 10 mm	41209.600	41209.601	10
	KT 10 CR	10 – 11 mm	41210.600	41210.601	10
	KT 11 CR	11 – 12 mm	41211.600	41211.601	10
	KT 12 CR	12 – 13 mm	41212.600	41212.601	10
	KT 13 CR	13 – 14 mm	41213.600	41213.601	10
	KT 14 CR	14 – 15 mm	41214.600	41214.601	10
	KT 15 CR	15 – 16 mm	41215.600	41215.601	10
	KTs 16 CR	16 mm	39901.600	39901.601	10
	KTs 17 CR	17 mm	39900.600	39900.601	10

Detailed product description from page 78.



* The products with article ending .600 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1. The materials used for these products have been tested and certified for outgassing according to VOC/SVOC (ISO 14644-8; ISO 16000-6,-9,-11,-25, VDI 2083 sheet 17).

** The products with the article ending .601 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1.

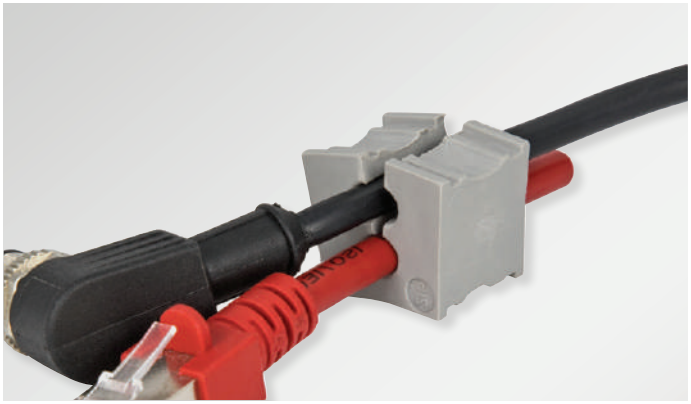
The cable grommets CR are each certified in connection with the cable entry frames KEL-ER CR and KEL-U CR.

*4X for indoor use only

KT CR
Grommets, Small, Multi

Description	Type	Clamping range	Order No. * gray	Order No. ** gray	PU
KT 2|x	KT 2|1 CR	2× ø 1 mm	39942.600	39942.601	10
	KT 2|2 CR	2× ø 2 mm	39935.600	39935.601	10
	KT 2|3 CR	2× ø 3 mm	39939.600	39939.601	10
	KT 2|4 CR	2× ø 4 mm	39906.600	39906.601	10
	KT 2|5 CR	2× ø 5 mm	41200.600	41200.601	10
	KT 2|6 CR	2× ø 6 mm	41201.600	41201.601	10
	KT 2|7 CR	2× ø 7 mm	41202.600	41202.601	10
	KT 2|8 CR	2× ø 8 mm	39917.600	39917.601	10
KT 4|x	KT 4|2 CR	4× ø 2 mm	39937.600	39937.601	10
	KT 4|3 CR	4× ø 3 mm	39914.600	39914.601	10
	KT 4|4 CR	4× ø 4 mm	39909.600	39909.601	10
	KT 4|5 CR	4× ø 5 mm	39908.600	39908.601	10
	KT 4|6 CR	4× ø 6 mm	39932.600	39932.601	10

Detailed product description from page 80.



* The products with article ending .600 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1. The materials used for these products have been tested and certified for outgassing according to VOC/SVOC (ISO 14644-8; ISO 16000-6,-9,-11,-25, VDI 2083 sheet 17).

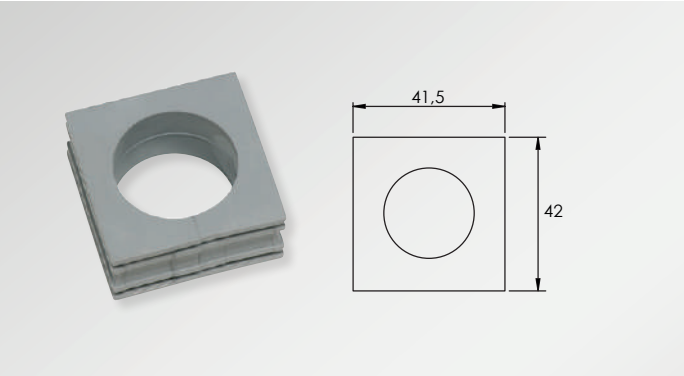
** The products with the article ending .601 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1.

The cable grommets CR are each certified in connection with the cable entry frames KEL-ER CR and KEL-U CR.

KT CR
Grommets, Large

Description	Type	Clamping range	Order No. * gray	Order No. ** gray	PU
ATG	ATG CR	Adapter grommet	41253.600	41253.601	10
BTG	BTG CR	Blank grommet	41252.600	41252.601	10
KT large	KTG 13 CR	13 – 14 mm	41263.600	41263.601	10
	KTG 14 CR	14 – 15 mm	41264.600	41264.601	10
	KTG 15 CR	15 – 16 mm	41265.600	41265.601	10
	KT 16 CR	16 – 17 mm	41216.600	41216.601	10
	KT 17 CR	17 – 18 mm	41217.600	41217.601	10
	KT 18 CR	18 – 19 mm	41218.600	41218.601	10
	KT 19 CR	19 – 20 mm	41219.600	41219.601	10
	KT 20 CR	20 – 21 mm	41220.600	41220.601	10
	KT 21 CR	21 – 22 mm	41221.600	41221.601	10
	KT 22 CR	22 – 23 mm	41222.600	41222.601	10
	KT 23 CR	23 – 24 mm	41223.600	41223.601	10
	KT 24 CR	24 – 25 mm	41224.600	41224.601	10
	KT 25 CR	25 – 26 mm	41225.600	41225.601	10
	KT 26 CR	26 – 27 mm	41226.600	41226.601	10
	KT 27 CR	27 – 28 mm	41227.600	41227.601	10
	KT 28 CR	28 – 29 mm	41228.600	41228.601	10
	KT 29 CR	29 – 30 mm	41229.600	41229.601	10
	KT 30 CR	30 – 31 mm	41230.600	41230.601	10
	KT 31 CR	31 – 32 mm	41231.600	41231.601	10
	KT 32 CR	32 – 33 mm	41232.600	41232.601	10
	KT 33 CR	33 – 34 mm	41233.600	41233.601	10
	KT 34 CR	34 – 35 mm	41234.600	41234.601	10

Detailed product description from page 79.



* The products with article ending .600 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1. The materials used for these products have been tested and certified for outgassing according to VOC/SVOC (ISO 14644-8; ISO 16000-6,-9,-11,-25, VDI 2083 sheet 17).

** The products with the article ending .601 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1.

The cable grommets CR are each certified in connection with the cable entry frames KEL-ER CR and KEL-U CR.

*4X for indoor use only

KEL-DPZ CR Series
Cable Entry Plates

Type	Cut-out mm	Number of cables	Order No. *	Order No. **	PU
KEL-DPZ 24 CR					
KEL-DPZ 24|14 CR	36 x 112 mm	10× 3.2 - 6.5 mm 4× 16 - 22 mm	43700.600 50700.600	43700.601 50700.601	5
KEL-DPZ 24|15 CR	36 x 112 mm	15× 7.2 - 12 mm	43720.600 50720.600	43720.601 50720.601	5
KEL-DPZ 24|16 CR	36 x 112 mm	8× 3.2 - 6.5 mm 4× 5 - 9.7 mm 2× 9 - 16.2 mm 2× 16 - 22 mm	43725.600 50725.600	43725.601 50725.601	5
KEL-DPZ 24|17 CR	36 x 112 mm	6× 3.2 - 6.5 mm 6× 5 - 10.2 mm 5× 9 - 16.2 mm	43705.600 50705.600	43705.601 50705.601	5
KEL-DPZ 24|25 CR	36 x 112 mm	12× 3.2 - 6.5 mm 7× 4.8 - 9.7 mm 6× 7.5 - 12 mm	43710.600 50710.600	43710.601 50710.601	5
KEL-DPZ 24|26 CR	36 x 112 mm	26× 5.0 - 10.2 mm	43711.600 50711.600	43711.601 50711.601	5
KEL-DPZ 24|32 CR	36 x 112 mm	21× 3.2 - 6.5 mm 8× 5 - 10.2 mm 3× 7.5 - 12 mm	43730.600 50730.600	43730.601 50730.601	5
KEL-DPZ 24|42 CR	36 x 112 mm	42× 3.2 - 6.5 mm	43715.600 50715.600	43715.601 50715.601	5
KEL-DPZ 24|121 CR	36 x 112 mm	119× 1.5 - 2.6 mm 2× 2.5 - 5 mm	43735.600 50735.600	43735.601 50735.601	5

Detailed product description from page 142.

* The products with article ending .600 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1. The materials used for these products have been tested and certified for outgassing according to VOC/SVOC (ISO 14644-8; ISO 16000-6,-9,-11,-25, VDI 2083 sheet 17).

** The products with the article ending .601 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1.

KEL-DPZ CR Series
Cable Entry Plates

Type	Cut-out mm	Number of cables	Order No. *	Order No. **	PU
KEL-DPZ 16 CR					
KEL-DPZ 16|11 CR	36 x 86 mm	11× 7.5 - 12 mm	43815.600	43815.601	5
KEL-DPZ 16|14 CR	36 x 86 mm	5× 3.2 - 6.5 mm 5× 5 - 10.2 mm 4× 9 - 16.2 mm	43816.600	43816.601	5
KEL-DPZ 16|20 CR	36 x 86 mm	11× 3.2 - 6.5 mm 5× 5 - 10.2 mm 4× 7.5 - 12 mm	43817.600	43817.601	5
KEL-DPZ 16|25 CR	36 x 86 mm	16× 3.2 - 6.5 mm 6× 5 - 10.2 mm 3× 7.5 - 12 mm	43818.600	43818.601	5
KEL-DPZ 16|34 CR	36 x 86 mm	34× 3.2 - 6.5 mm	43819.600	43819.601	5
KEL-DPZ 6 CR					
KEL-DPZ 6|12 CR	52 x 36 mm	12 x 4.5 - 8.0 mm	43809.600	43809.601	5
KEL-DPZ 6|18-1 CR	52 x 36 mm	6 x 2.5 - 5.0 mm 5 x 3.2 - 6.5 mm 7 x 4.5 - 8.0 mm	43811.600	43811.601	5
KEL-DPZ 6|18 CR	52 x 36 mm	18 x 3.2 - 6.5 mm	43812.600	43812.601	5
KEL-DPZ 6|23 CR	52 x 36 mm	13 x 2.5 - 5.0 mm 10 x 3.2 - 6.5 mm	43813.600	43813.601	5
KEL-DPZ 6|27 CR	52 x 36 mm	27 x 2.5 - 5.0 mm	43814.600	43814.601	5

Detailed product description from page 142.

* The products with article ending .600 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1. The materials used for these products have been tested and certified for outgassing according to VOC/SVOC (ISO 14644-8; ISO 16000-6,-9,-11,-25, VDI 2083 sheet 17).

** The products with the article ending .601 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1.

KEL-DPZ CR Series
Cable Entry Plates

Type	Cut-out mm	Number of cables	Order No. *	Order No. **	PU
KEL-DPZ-B CR					
KEL-DPZ-B 13 CR	46 x 46 mm	8× 3.2 - 6.5 mm 4× 5 - 10.2 mm 1× 16 - 22 mm	43794.600 50794.600	43794.601 50794.601	5
KEL-DPZ-B 17 CR	46 x 46 mm	10× 3.2 - 6.5 mm 4× 5 - 10.2 mm 2× 7.5 - 12 mm 1× 9 - 16.2 mm	43796.600 50796.600	43796.601 50796.601	5
KEL-DPZ-B 25 CR	46 x 46 mm	25× 3.2 - 6.5 mm	43798.600 50798.600	43798.601 50798.601	5
KEL-DPZ-E CR					
KEL-DPZ-E 112|7 CR	18 x 112 mm	7× 7.5 - 12 mm	43780.600 50780.600	43780.601 50780.601	5
KEL-DPZ-E 112|21 CR	18 x 112 mm	21× 3.2 - 6.5 mm	43790.600 50790.600	43790.601 50790.601	5
KEL-DPZ-KX/KL CR					
KEL-DPZ-KX/KL 72 CR	62 x 192 mm	42× 3.2 - 6.5 mm 21× 5 - 10.2 mm 6× 9 - 16.2 mm 3× 16 - 22 mm	43675.001.600 43675.101.600	43675.001.601 43675.101.601	1

Detailed product description from page 142.

* The products with article ending .600 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1. The materials used for these products have been tested and certified for outgassing according to VOC/SVOC (ISO 14644-8; ISO 16000-6,-9,-11,-25, VDI 2083 sheet 17).

** The products with the article ending .601 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1.

KEL-DPZ Round CR Series
Cable Entry Plates

Type	Number of cables	Thread metric	Thread length	External diameter	Mounting height	Order No. *	Order No. **	PU
KEL-DPZ 25|3 CR	2× 3.2 - 5.2 mm/0.126 - 0.20" 1× 3.2 - 6.5 mm/0.126 - 0.248"	M25 × 1.5	14 mm 0.551"	39 mm 1.535"	8 mm 0.315"	43736.600 50736.600	43736.601 50736.601	5
KEL-DPZ 25|4 CR	4× 3.2 - 5.2 mm/0.126 - 0.20"	M25 × 1.5	14 mm 0.551"	39 mm 1.535"	8 mm 0.315"	43737.600 50737.600	43737.601 50737.601	5
KEL-DPZ 32|4 CR	3× 3.2 - 6.5 mm/0.126 - 0.248" 1× 7.2 - 12.5 mm/0.295 - 0.472"	M32 × 1.5	14 mm 0.551"	44 mm 1.732"	8 mm 0.315"	43732.600 50732.600	43732.601 50732.601	5
KEL-DPZ 32|4-2 CR	4× 5 - 9.5 mm/0.197 - 0.374"	M32 × 1.5	14 mm 0.551"	44 mm 1.732"	8 mm 0.315"	43733.600 50733.600	43733.601 50733.601	5
KEL-DPZ 32|7 CR	7× 3.2 - 6.5 mm/0.126 - 0.248"	M32 × 1.5	14 mm 0.551"	44 mm 1.732"	8 mm 0.315"	43734.600 50734.600	43734.601 50734.601	5
KEL-DPZ 40|8 CR	4× 3.2 - 6.5 mm/0.126 - 0.248" 4× 5 - 10.2 mm/0.197 - 0.402"	M40 × 1.5	14 mm 0.551"	52 mm 2.047"	8 mm 0.315"	43741.600 50741.600	43741.601 50741.601	5
KEL-DPZ 50|8 CR	5× 5 - 10.2 mm/0.197 - 0.402" 3× 7.2 - 12.5 mm/0.295 - 0.472"	M50 × 1.5	14 mm 0.551"	62 mm 2.441"	8 mm 0.315"	43750.600 50750.600	43750.601 50750.601	5
KEL-DPZ 50|10 CR	7× 3.2 - 6.5 mm/0.126 - 0.248" 2× 5 - 10.2 mm/0.197 - 0.402" 1× 16 - 22.2 mm/0.63 - 0.866"	M50 × 1.5	14 mm 0.551"	62 mm 2.441"	8 mm 0.315"	43751.600 50751.600	43751.601 50751.601	5
KEL-DPZ 50|12 CR	4× 3.2 - 6.5 mm/0.126 - 0.248" 8× 5 - 10.2 mm/0.197 - 0.402"	M50 × 1.5	14 mm 0.551"	62 mm 2.441"	8 mm 0.315"	43752.600 50752.600	43752.601 50752.601	5
KEL-DPZ 50|19 CR	19× 3.2 - 6.5 mm/0.126 - 0.248"	M50 × 1.5	14 mm 0.551"	62 mm 2.441"	8 mm 0.315"	43758.600 50758.600	43758.601 50758.601	5
KEL-DPZ 50|78 CR	76× 1.5 - 2.6 mm 2× 2.5 - 5 mm	M50 × 1.5	14 mm 0.551"	62 mm 2.441"	8 mm 0.315"	43756.600 50756.600	43756.601 50756.601	5
KEL-DPZ 63|9 CR	1× 3.2 - 6.5 mm/0.126 - 0.248" 3× 5 - 10.2 mm/0.197 - 0.402" 4× 9 - 16.2 mm/0.354 - 0.638" 1× 16 - 22.2 mm/0.63 - 0.866"	M63 × 1.5	14 mm 0.551"	75 mm 2.953"	8 mm 0.315"	43760.600 50760.600	43760.601 50760.601	5
KEL-DPZ 63|13 CR	4× 3.2 - 6.5 mm/0.126 - 0.248" 4× 5 - 10.2 mm/0.197 - 0.402" 5× 9 - 16.2 mm/ 0.354 - 0.638"	M63 × 1.5	14 mm 0.551"	75 mm 2.953"	8 mm 0.315"	43761.600 50761.600	43761.601 50761.601	5
KEL-DPZ 63|14 CR	14× 5 - 10.2 mm/0.197 - 0.402"	M63 × 1.5	14 mm 0.551"	75 mm 2.953"	8 mm 0.315"	43762.600 50762.600	43762.601 50762.601	5
KEL-DPZ 63|35 CR	35× 3.2 - 6.5 mm/0.126 - 0.248"	M63 × 1.5	14 mm 0.551"	75 mm 2.953"	8 mm 0.315"	43763.600 50763.600	43763.601 50763.601	5

Detailed product description from page 160.

* The products with article ending .600 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1. The materials used for these products have been tested and certified for outgassing according to VOC/SVOC (ISO 14644-8; ISO 16000-6,-9,-11,-25, VDI 2083 sheet 17).

** The products with the article ending .601 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1.

*4X for indoor use only | ** Only valid for gray product types

KEL-DPZ-HD CR
Cable Entry Plates
Hygienic Design Line

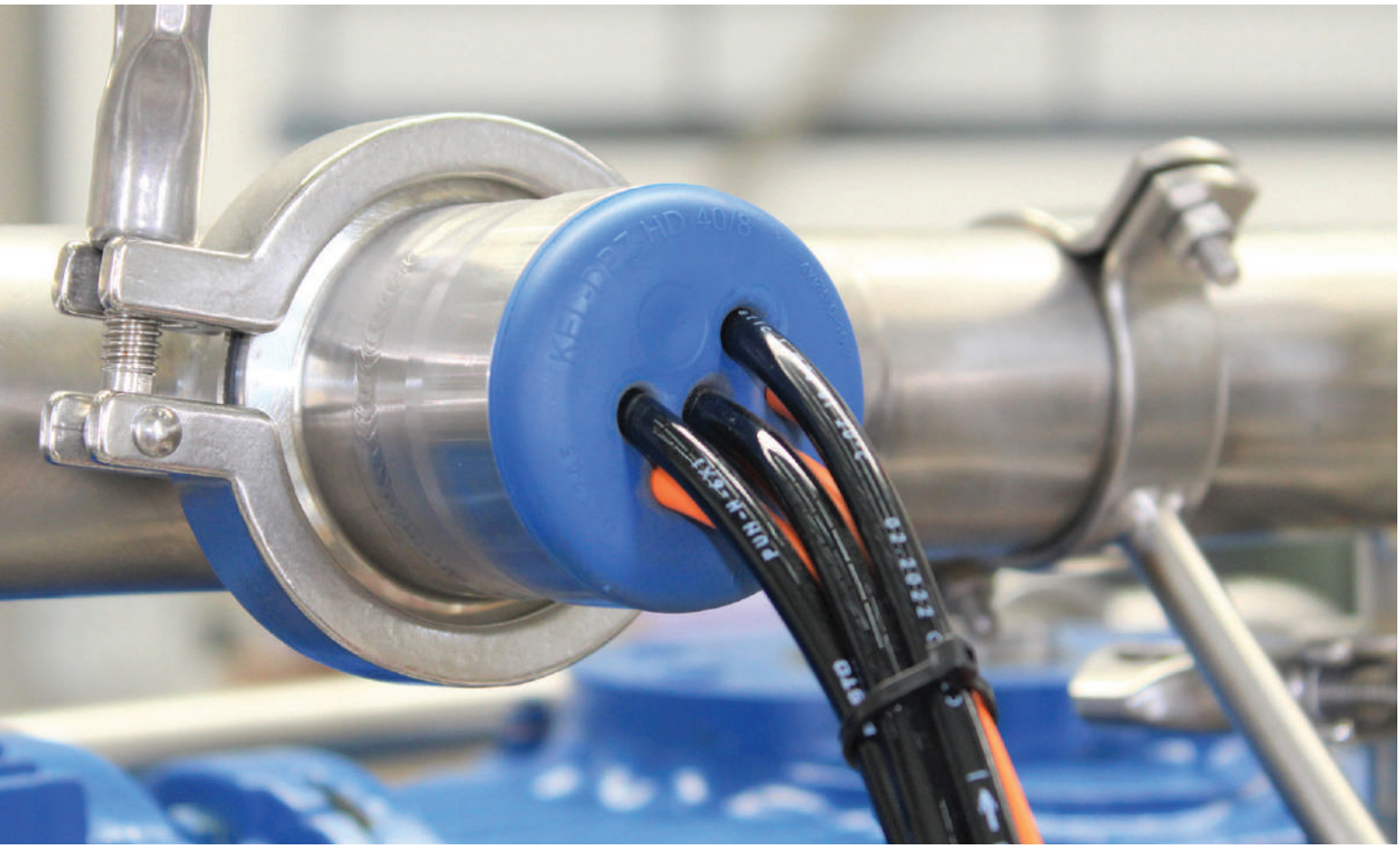
Type	Number of cables	Thread metric	Thread length	External diameter	Mounting height	Order No. *	Order No. **	PU
KEL-DPZ-HD 32|4 CR	3× 3.2 - 6.5 mm/0.126 - 0.248" 1× 7.2 - 12.5 mm/0.295 - 0.472"	M32 × 1.5	14 mm 0.551"	44 mm 1.732"	8 mm 0.315"	70351.600	70351.601	5
KEL-DPZ-HD 32|4-2 CR	4× 5 - 9.5 mm/0.197 - 0.374"	M32 × 1.5	14 mm 0.551"	44 mm 1.732"	8 mm 0.315"	70352.600	70352.601	5
KEL-DPZ-HD 32|7 CR	7× 3.2 - 6.5 mm/0.126 - 0.248"	M32 × 1.5	14 mm 0.551"	44 mm 1.732"	8 mm 0.315"	70353.600	70353.601	5
KEL-DPZ-HD 40|8 CR	4× 3.2 - 6.5 mm/0.126 - 0.248" 4× 5 - 10.2 mm/0.197 - 0.402"	M40 × 1.5	14 mm 0.551"	52 mm 2.047"	8 mm 0.315"	70354.600	70354.601	5
KEL-DPZ-HD 50|8 CR	5× 5 - 10.2 mm/0.197 - 0.402" 3× 7.2 - 12.5 mm/0.295 - 0.472"	M50 × 1.5	14 mm 0.551"	62 mm 2.441"	8 mm 0.315"	70355.600	70355.601	5
KEL-DPZ-HD 50|10 CR	7× 3.2 - 6.5 mm/0.126 - 0.248" 2× 5 - 10.2 mm/0.197 - 0.402" 1× 16 - 22.2 mm/0.63 - 0.866"	M50 × 1.5	14 mm 0.551"	62 mm 2.441"	8 mm 0.315"	70356.600	70356.601	5
KEL-DPZ-HD 50|12 CR	4× 3.2 - 6.5 mm/0.126 - 0.248" 8× 5 - 10.2 mm/0.197 - 0.402"	M50 × 1.5	14 mm 0.551"	62 mm 2.441"	8 mm 0.315"	70357.600	70357.601	5
KEL-DPZ-HD 50|19 CR	19× 3.2 - 6.5 mm/0.126 - 0.248"	M50 × 1.5	14 mm 0.551"	62 mm 2.441"	8 mm 0.315"	70358.600	70358.601	5
KEL-DPZ-HD 63|9 CR	1× 3.2 - 6.5 mm/0.126 - 0.248" 3× 5 - 10.2 mm/0.197 - 0.402" 4× 9 - 16.2 mm/0.354 - 0.638" 1× 16 - 22.2 mm/0.63 - 0.866"	M63 × 1.5	14 mm 0.551"	75 mm 2.953"	8 mm 0.315"	70359.600	70359.601	5
KEL-DPZ-HD 63|13 CR	4× 3.2 - 6.5 mm/0.126 - 0.248" 4× 5 - 10.2 mm/0.197 - 0.402" 5× 9 - 16.2 mm/0.354 - 0.638"	M63 × 1.5	14 mm 0.551"	75 mm 2.953"	8 mm 0.315"	70360.600	70360.601	5
KEL-DPZ-HD 63|14 CR	14× 5 - 10.2 mm/0.197 - 0.402"	M63 × 1.5	14 mm 0.551"	75 mm 2.953"	8 mm 0.315"	70361.600	70361.601	5
KEL-DPZ-HD 63|35 CR	35× 3.2 - 6.5 mm/0.126 - 0.248"	M63 × 1.5	14 mm 0.551"	75 mm 2.953"	8 mm 0.315"	70362.600	70362.601	5

Detailed product description from page 434.

* The products with article ending .600 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1. The materials used for these products have been tested and certified for outgassing according to VOC/SVOC (ISO 14644-8; ISO 16000-6,-9,-11,-25, VDI 2083 sheet 17).

** The products with the article ending .601 are tested and certified for particle emission for cleanroom class 1 according to ISO 14644-1.

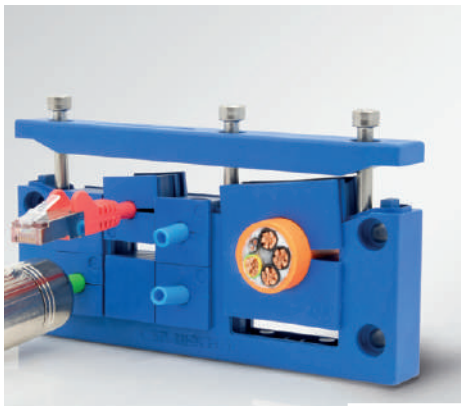
11

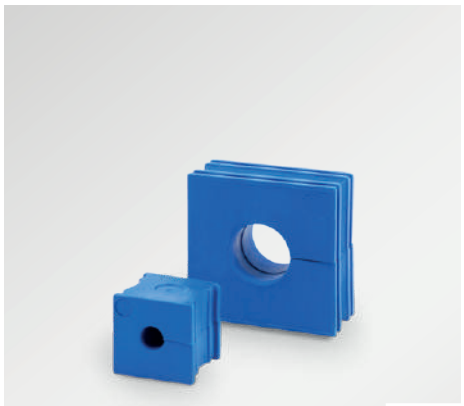


BLUE LINE | HYGIENIC DESIGN LINE | 1935/2004/EG | EU VO. 10/2011 | FDA | c UL us | UL TYPE 4X | UL TYPE 12

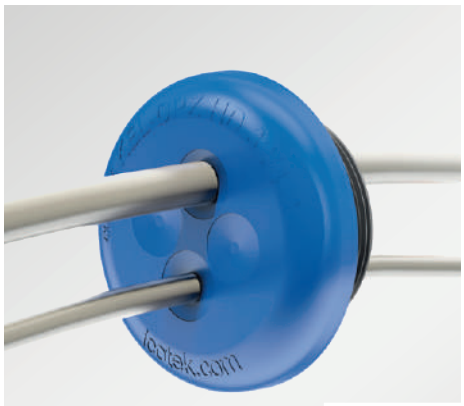
IP68 | ECOLAB certified | EN ISO 14644 | PNEUMATICS | RoHS compliant | Made in Germany | +80°C -40°C | 3.2–22.2 mm

Cable Entry Systems
for the Food Industry


KEL-ER-BL


KT-BL

KEL-DPU-HD


KEL-DPZ-HD

ST-B-HDD

11 Cable Entry Systems
for the Food Industry

The range of food and beverages on the consumer market has never been bigger; food marketing has never been more complex and diverse. This challenges manufacturers of food & beverage packaging equipment to design more and more efficient, flexible and productive machinery. At the same time, due to international competition, engineers are constantly striving to optimise costs and processes.

Hygienic Design products and products in the signal color blue are also popular in the pharmaceutical sector. With the membrane based hygienic cable entry plates, cables or pneumatic hoses can be quickly and space-efficiently routed into control cabinets, panels and machines and can be sealed with certified protection classes up to IP66/IP68 (acc. to EN 60529). Hygienic icotek cable entries are FDA-compliant and offer an economical alternative to expensive hygienic stainless steel cable glands.

Food production areas

1 Food zone: Product zone
All appliance parts and components that come into direct contact with food must be washable, disinfectable, corrosion-resistant, non-toxic, non-absorbent and smooth.

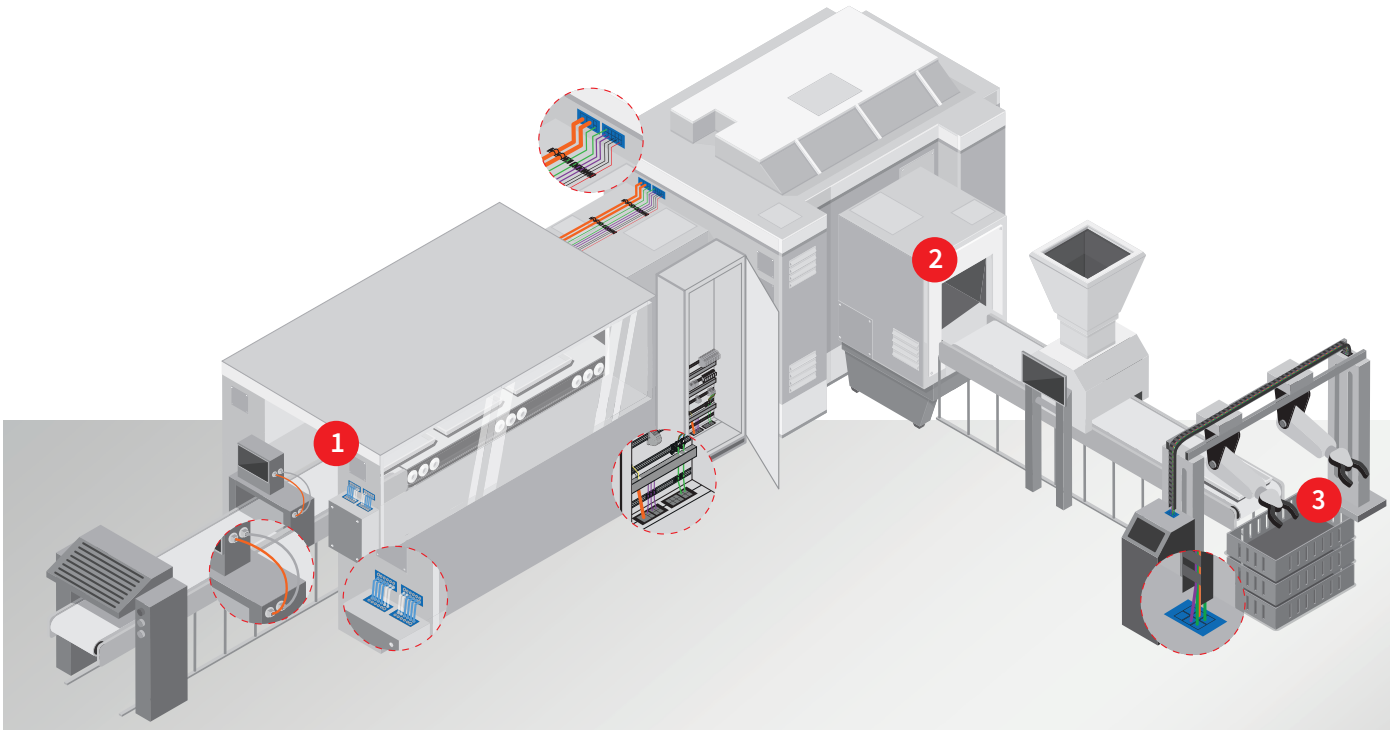
Matching products
- Hygienic Design Line (depending on the application)

2 Food zone: Splash zone
Food can come into contact with the components, but is not returned to the product cycle. As this area must also be cleaned regularly, the special requirements for the product must be observed here.

Matching products
- Hygienic Design Line
- Blue Line (depending on the application)

3 Food zone: Product-free zone
No direct contact between food and system components. These components must be corrosion-resistant, easily washable and disinfectable.

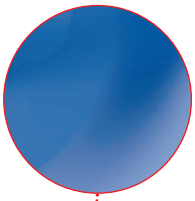
Matching products
- Hygienic Design Line
- Blue Line
- Cable entry systems of product groups 1 and 2



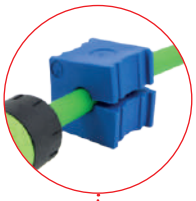
11.1 Cable Entry Frames
for the Food Industry
Camera Detectable

BLUE LINE | IP65 | IP64 | ECOLAB certified | UV ISO 4892-2A
PNEUMATICS | RoHS compliant | Made in Germany | +140°C -40°C | 1–35 mm

Split system

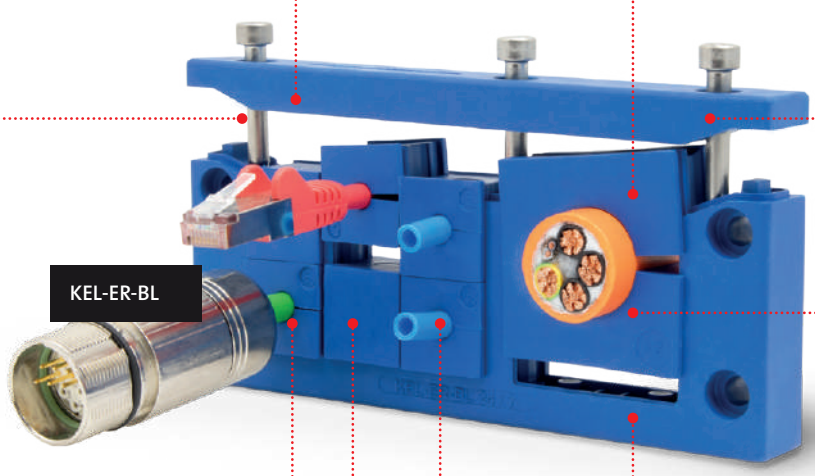


Signal color blue (similar to Signal Blue RAL 5005)

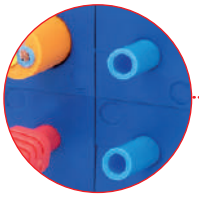


Maintain warranty on pre-terminated cables

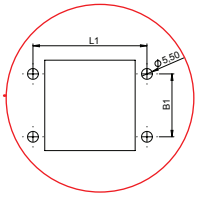
Fast and easy assembly



High cable density



IP65 rated protection due to a high clamping pressure on the cover lid and injected sealing



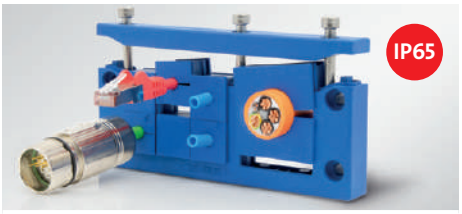
Most sizes are industrial standard cut-outs

High cable density

Integrated strain relief according to EN 62444

EN 62444

BLUE LINE



Split cable entry frames
for the food industry
camera detectable
with IP65 rated protection

KEL-ER-BL series

428 – 430

Split Cable Grommets, Single
for the food industry
camera detectable
with IP65 rated protection
for cable diameters 1 – 35 mm

KT-BL

431 – 432

Split Cable Grommets, multi
for the food industry
camera detectable
for cable diameters 1 – 8 mm

KT-BL multi

433

Plugs for Cable Entry Plates
Hygienic Design Line

ST-B-HD | ST-B-HDD

440

KEL-ER-BL Series
Cable Entry Frames for the Food Industry Camera Detectable with IP65 Rating

BLUE LINE IP64 IP65

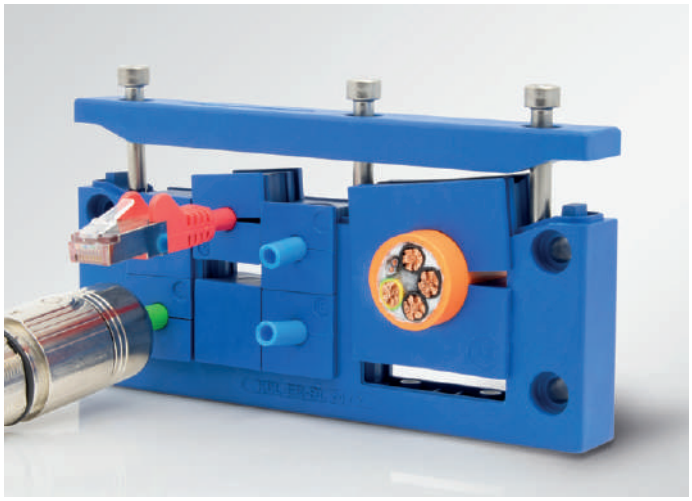
The KEL-ER-BL in the signal color blue is preferably used in the area of food packaging and processing machines where there is no direct contact with food. Products in this signal color are also popular in the pharmaceutical sector.

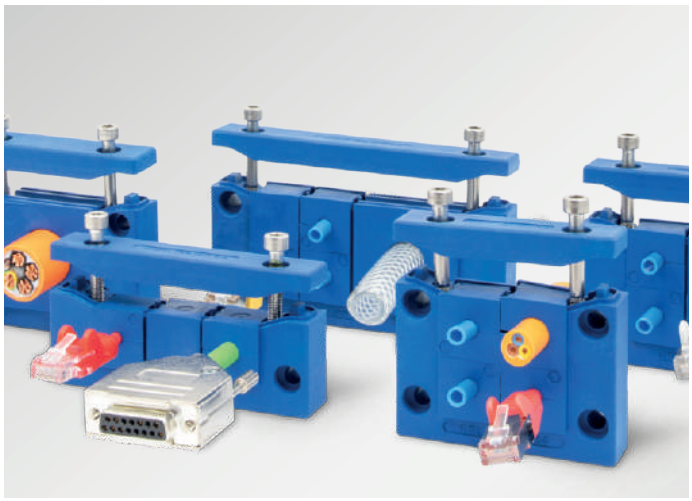
The KEL-ER-BL is a split cable entry system for cables with and without connectors. Depending on the size, cables with a diameter of 1 to 16 mm (single grommets KT-BL 1 to KT-BL 15) or 16 to 35 mm (single grommets KT-BL 16 to 34) can be routed, sealed with IP65 and simultaneously strain-relieved according to DIN EN 62444. The cable grommets are automatically fixed into the frame during assembly. After complete fitting, the end cover is screwed on.

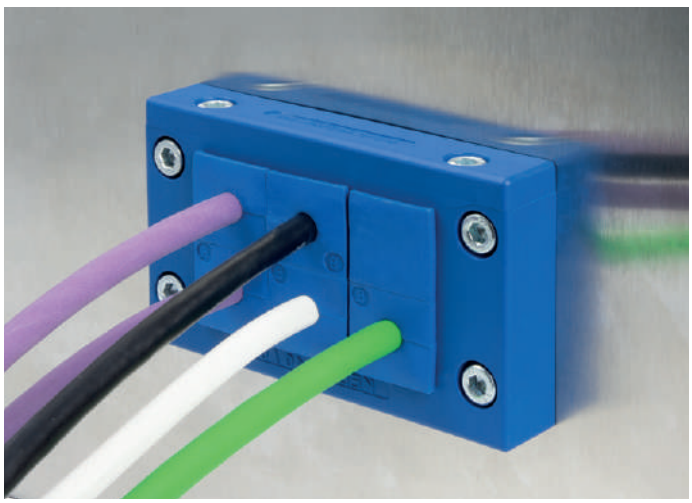
The KEL-ER frames match exactly the cut-out dimensions for 10-, 16- and 24-pin standard industrial connectors. Either a cut-out of 36 mm or 46 mm in height can be chosen depending on the cables being routed. The KEL-ER-B frame matches the cut-out dimensions of 46 × 46 mm measuring instruments.

The single-row cable entry KEL-ER-BL-E is characterised by its space-saving design and is therefore ideal for confined spaces and cables with flat connectors (e.g. Sub-D).

The KEL-ER-BL series is IP65 rated due to the injected seal and the use of single grommets. An additional blue flat rubber gasket is included in the shipment.







Advantages

- Maintain manufacturer's warranty on pre-terminated cables
- Retrofittings, repairs and maintenance can be done much more easily and quickly
- High cable density, wide variety of grommets
- Strain relief according to EN 62444
- High stability, vibration resistant
- Very simple assembly

Specifications

Material	Polyamide (PA)
Flame class	UL 94 V-0, self-extinguishing
IP rating	IP65, with gasket and correct selection of single grommets (certified acc. to EN 60529)
Color	Blue (similar to Signal Blue RAL 5005)
Temperature	-40°C to +140°C (static)
Properties	Halogen-free, silicone-free
Frame depth	17 mm

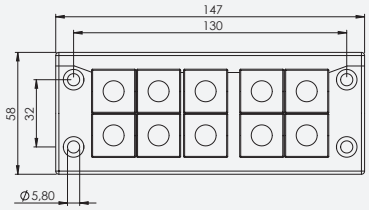
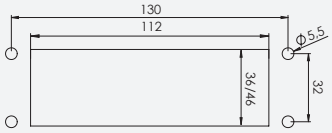
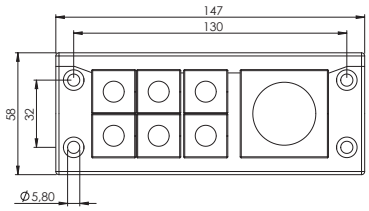
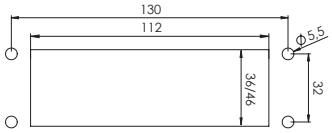
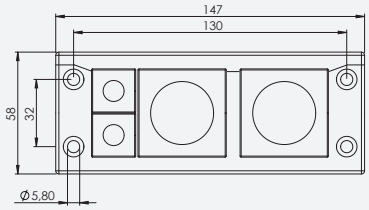
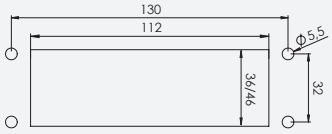
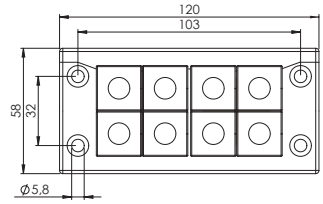
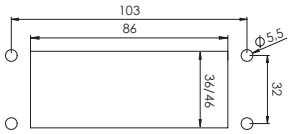
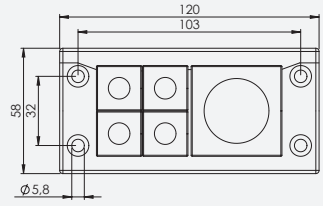
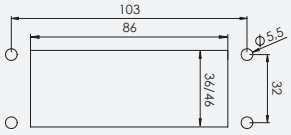
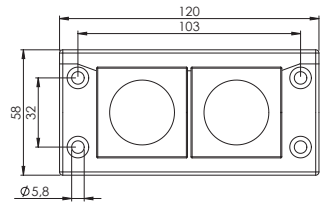
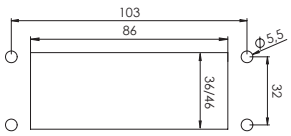
Accessories

KT-BL Cable grommets	431 - 432

KEL-ER-BL

Cable Entry Frames
Camera Detectable
KEL-ER-BL 24, KEL-ER-BL 16

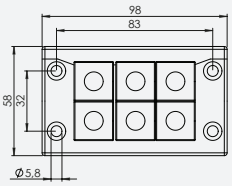
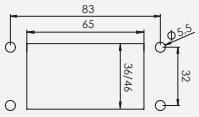
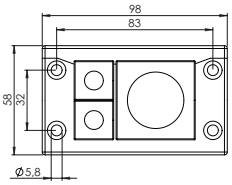
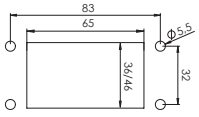
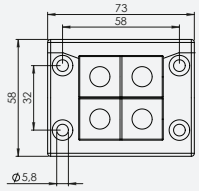
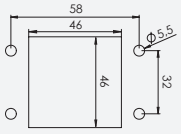
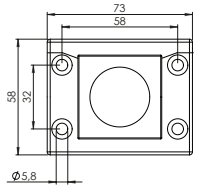
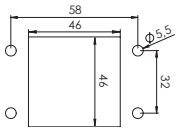
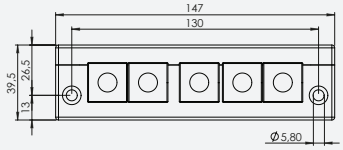
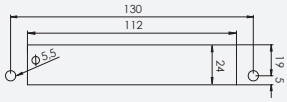
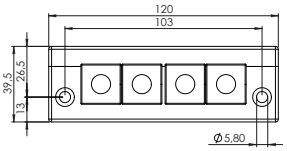
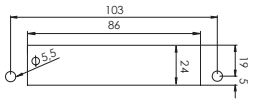
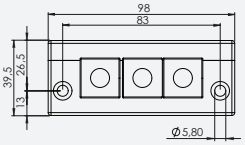
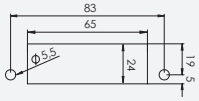
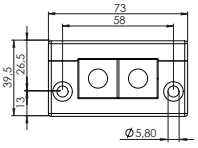
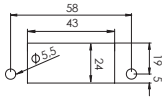
IP64 IP65 ECOLAB certified UV ISO 4892-2A PNEUMATICS RoHS compliant Made in Germany BLUE LINE

Description	Cut-out | Drilling template	Type	Cut-out mm	Grommets KT-BL small | large	Order No.	PU
		KEL-ER-BL 24|10 with V2A screws	36/46 × 112	10 | –	70000.200	10
		KEL-ER-BL 24|7 with V2A screws	36/46 × 112	6 | 1	70001.200	10
		KEL-ER-BL 24|4 with V2A screws	36/46 × 112	2 | 2	70002.200	10
		KEL-ER-BL 16|8 with V2A screws	36/46 × 86	8 | –	70003.200	10
		KEL-ER-BL 16|5 with V2A screws	36/46 × 86	4 | 1	70004.200	10
		KEL-ER-BL 16|2 with V2A screws	36/46 × 86	– | 2	70005.200	10

KEL-ER-BL

Cable Entry Frames
Camera Detectable
KEL-ER-BL 10, KEL-ER-BL-B, KEL-ER-BL-E

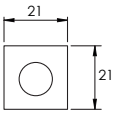
BLUE LINE | IP64 | IP65 | ECOLAB certified | UV ISO 4892-2A | PNEUMATICS | RoHS compliant | Made in Germany

Description	Cut-out | Drilling template	Type	Cut-out mm	Grommets KT-BL small | large	Order No.	PU
		KEL-ER-BL 10|6 with V2A screws	36/46 × 65	6 | –	70006.200	10
		KEL-ER-BL 10|3 with V2A screws	36/46 × 65	2 | 1	70007.200	10
		KEL-ER-BL B4 with V2A screws	46 × 46	4 | –	70008.200	10
		KEL-ER-BL B1 with V2A screws	46 × 46	– | 1	70009.200	10
		KEL-ER-BL-E5 with V2A screws	112 × 24	5 | –	70010.200	10
		KEL-ER-BL-E4 with V2A screws	112 × 24	4 | –	70011.200	10
		KEL-ER-BL-E3 with V2A screws	65 × 24	3 | –	70012.200	10
		KEL-ER-BL-E2 with V2A screws	43 × 24	2 | –	70013.200	10

KT-BL

Split Cable Grommets for KEL-ER-BL for the Food Industry Camera Detectable Small, Single

BLUE LINE | IP64 | IP65 | ECOLAB certified | UV ISO 4892-2A | PNEUMATICS | RoHS compliant | Made in Germany



The KT-BL range of grommets are particularly suitable for use with the KEL-ER-BL cable entry frames.
The signal color blue provides clear visual color identification.

They are designed for cable diameters from 1 to 16 mm. Blank grommets can seal unused grommet locations.

When installing the small grommets in multiple rows, the flat sides should be facing each other. This allows the flat sides to match up and provide a secure seal.

Advantages

- Routing of cables with and without connectors through the cable entry frame KEL-ER-BL
- High protection class up to IP65
- High strain relief in accordance with EN 62444
- Available for a wide range of cable diameters
- Signal color blue for a clear visual color recognition in the food industry

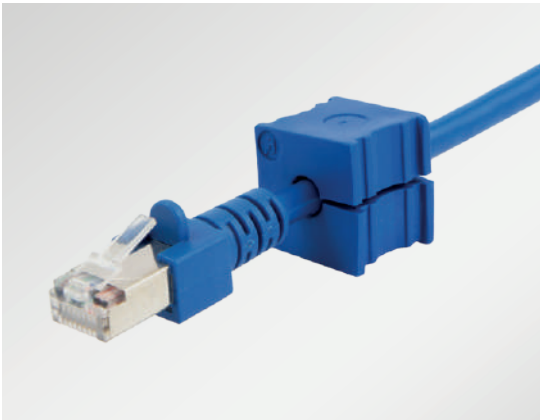
Specification

Material	Elastomer
Flame class	UL 94 V-0, self-extinguishing
IP rating	up to IP65
Color	Blue (similar to Signal blue RAL 5005)
Temperature	-40°C to +100°C (static)
Properties	Halogen-free, silicone-free

Suitable for

KEL-ER-BL series 431 - 432

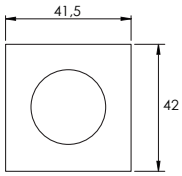
Description	Type	Clamping range	Order No	PU
	KT-BL 1	1 – 2 mm	70101	10
	KT-BL 2	2 – 3 mm	70102	10
	KT-BL 3	3 – 4 mm	70103	10
	KT-BL 4	4 – 5 mm	70104	10
	KT-BL 5	5 – 6 mm	70105	10
	KT-BL 6	6 – 7 mm	70106	10
	KT-BL 7	7 – 8 mm	70107	10
	KT-BL 8	8 – 9 mm	70108	10
	KT-BL 9	9 – 10 mm	70109	10
	KT-BL 10	10 – 11 mm	70110	10
	KT-BL 11	11 – 12 mm	70111	10
	KT-BL 12	12 – 13 mm	70112	10
	KT-BL 13	13 – 14 mm	70113	10
	KT-BL 14	14 – 15 mm	70114	10
	KT-BL 15	15 – 16 mm	70115	10
	BTK-BL	Blank grommet	70135	10



KT-BL

Split Cable Grommets for KEL-ER-BL for the Food Industry Camera Detectable Large, Single

BLUE LINE | IP64 | IP65 | ECOLAB certified | UV ISO 4892-2A | PNEUMATICS | RoHS compliant | Made in Germany



The KT-BL range of grommets are particularly suitable for use with the KEL-ER-BL cable entry frames. The signal color blue provides clear visual color identification.

They are designed for cable diameters from 16 to 35 mm.

Advantages

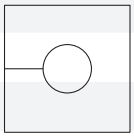
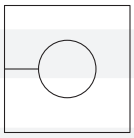
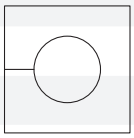
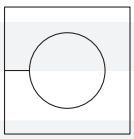
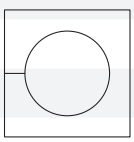
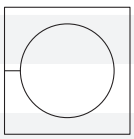
- Routing of cables with and without connectors through the cable entry frame KEL-ER-BL
- High protection class up to IP65
- High strain relief in accordance with EN 62444
- Available for a wide range of cable diameters
- Signal color blue for a clear visual color recognition in the food industry

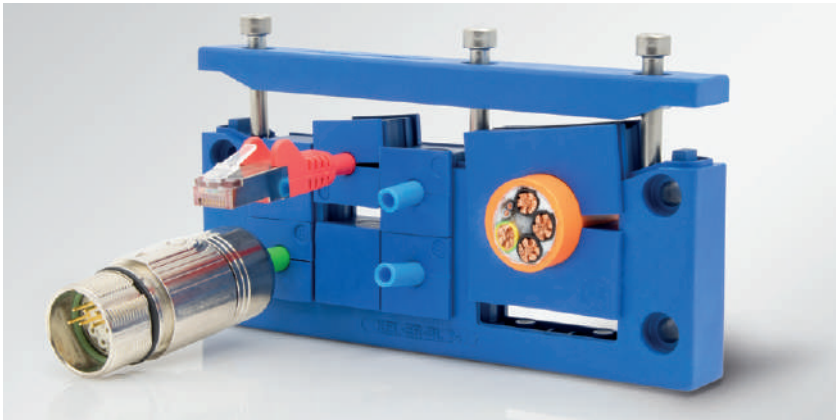
Specifications

Material	Elastomer
Flame class	UL 94 V-0, self-extinguishing
IP rating	up to IP65
Color	Blue (similar to Signal blue RAL 5005)
Temperature	-40°C to +100°C (static)
Properties	Halogen-free, silicone-free

Suitable for

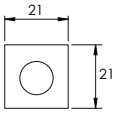
KEL-ER-BL series 428 - 430

Description	Type	Clamping range	Order No	PU
	KT-BL 16	16 – 17 mm	70116	10
	KT-BL 17	17 – 18 mm	70117	10
	KT-BL 18	18 – 19 mm	70118	10
	KT-BL 19	19 – 20 mm	70119	10
	KT-BL 20	20 – 21 mm	70120	10
	KT-BL 21	21 – 22 mm	70121	10
	KT-BL 22	22 – 23 mm	70122	10
	KT-BL 23	23 – 24 mm	70123	10
	KT-BL 24	24 – 25 mm	70124	10
	KT-BL 25	25 – 26 mm	70125	10
	KT-BL 26	26 – 27 mm	70126	10
	KT-BL 27	27 – 28 mm	70127	10
	KT-BL 28	28 – 29 mm	70128	10
	KT-BL 29	29 – 30 mm	70129	10
	KT-BL 30	30 – 31 mm	70130	10
	KT-BL 31	31 – 32 mm	70131	10
	KT-BL 32	32 – 33 mm	70132	10
	KT-BL 33	33 – 34 mm	70133	10
	KT-BL 34	34 – 35 mm	70134	10
	IP54	BTG-BL	Blank grommet	70136	10



KT-BL

Split Cable Grommets for KEL-ER-BL for the Food Industry Camera Detectable Small, Multi



In addition to the single cable grommets, multiple grommets are now also available in the KT-BL series.

The KT-BL range of grommets are particularly suitable for the use with the KEL-ER-BL cable entry frames. The signal color blue provides clear visual color identification.

User benefits

- Routing of cables with and without connectors through the cable entry frame KEL-ER-BL
- High protection class up to IP65
- High strain relief in accordance with EN 62444

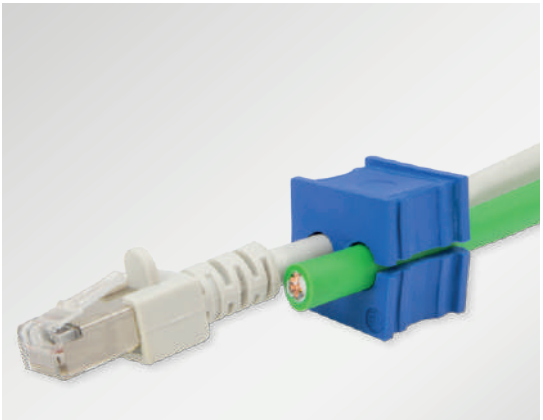
Features

- Available for a wide range of cable diameters
- Signal color blue for a clear visual color recognition in the food industry

Specifications

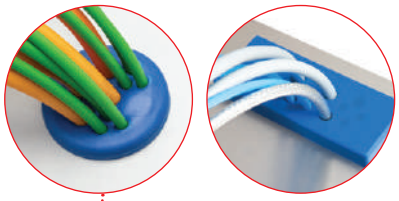
Material	Elastomer
Flame class	UL 94 V-0, self-extinguishing
IP rating	up to IP65
Color	Blue (similar to Signal blue RAL 5005)
Temperature	-40°C to +100°C (static)
Properties	Halogen-free, silicone-free

Description	Type	Clamping range	Order No.	PU
	KT-BL 2|1	2x ø 1 mm	41235	10
	KT-BL 2|2	2x ø 2 mm	41236	10
	KT-BL 2|3	2x ø 3 mm	41237	10
	KT-BL 2|4	2x ø 4 mm	41238	10
	KT-BL 2|5	2x ø 5 mm	41239	10
	KT-BL 2|6	2x ø 6 mm	41240	10
	KT-BL 2|7	2x ø 7 mm	41241	10
	KT-BL 2|8	2x ø 8 mm	41242	10
	KT-BL 4|2	4x ø 2 mm	41243	10
	KT-BL 4|3	4x ø 3 mm	41244	10
	KT-BL 4|4	4x ø 4 mm	41245	10
	KT-BL 4|5	4x ø 5 mm	41246	10
	KT-BL 4|6	4x ø 6 mm	41247	10



11.2 Cable Entry Plates for the Food Industry – *Hygienic Design Line*

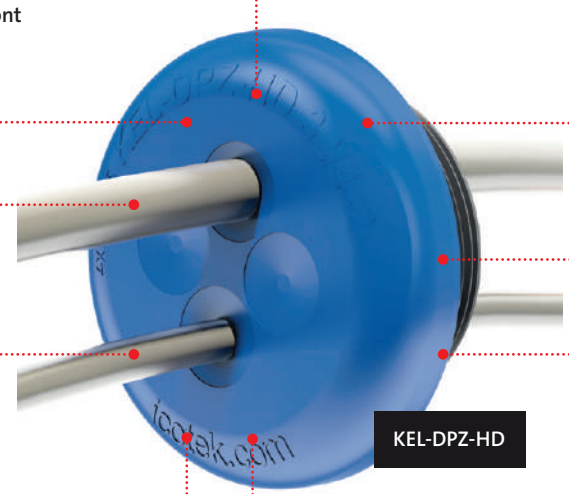
HYGIENIC DESIGN LINE | 1935/2004/EG | EU VO. 10/2011 | FDA | cULus | UL TYPE 4X | UL TYPE 12 | ECOLAB certified | H_2O_2 | EN ISO 14644 | up to IP68 | PNEUMATICS | RoHS compliant | Made in Germany | +176°F -40°F | 3.2–22.2 mm



High cable density

FDA compliant, food approval acc. to 1935/2004/EG and (EU) 10/2011, Ecolab certified

IP65 to IP68 rated protection, double cable sealing on front and back



Signal blue color (similar to Signal Blue RAL 5005)

Fast and easy assembly

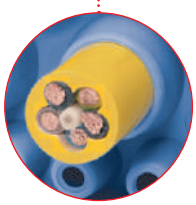
Very smooth surface

Compact, space-saving design

KEL-DPZ-HD

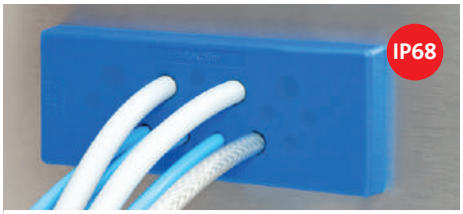
For metric cut-outs

The fixation is very simple with the lock nut



Flexible clamping range, up to 7 mm

HYGIENIC DESIGN LINE



Cable Entry Plates
Screw-In or Snap-In Mounting,
High Strain Relief
Hygienic Design Line

KEL-DPU-HD

436 – 437

Cable Entry Plates, Round
with Thread and Locknut
M32 – M63
Hygienic Design Line

KEL-DPZ-HD

438 – 439

Plugs for Cable Entry Plates
Hygienic Design Line

ST-B-HD | ST-B-HDD

440

KEL-DPU-HD

Heavy-Duty Cable Entry Plates

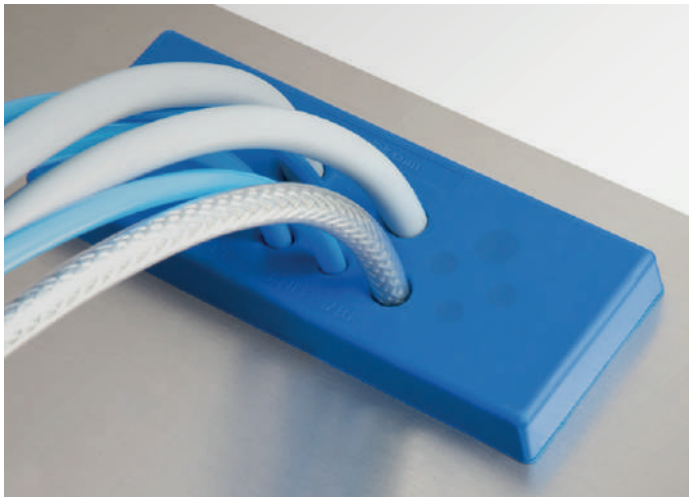
Hygienic Design Line

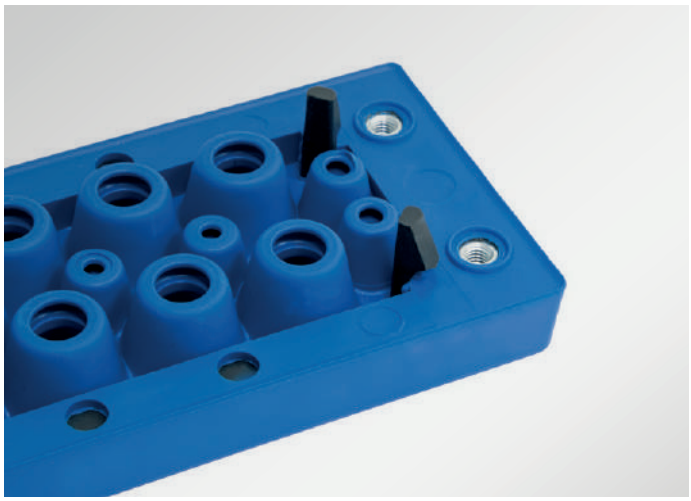
HYGIENIC DESIGN LINE | IP66 | IP68 | FDA | 1935/2004/EG | EU VO. 10/2011

The cable entry plates KEL-DPU-HD have been specially developed for installation in food processing and packaging machines. During the development according to the Hygienic Design guidelines, care was taken to ensure that the visible side of the cable entry plate are free of dirt-collecting recesses. The surface was kept very smooth. The outer contour has a radius of 6 mm instead of the required 3 mm. In addition, the KEL-DPU-HD uses an FDA-compliant elastomer in accordance with food approval 1935/2004/EG and (EU) 10/2011. The signal color blue ensures a clear visual color recognition.

KEL-DPU-HD entry plates are designed to route and seal cables without connectors (from 3.2 mm to 20.5 mm in diameter) in limited space with IP66/IP68**. The KEL-DPU-HD is particularly characterized by its solid robust frame and the increased strain relief of the routed cables.

The KEL-DPU-HD 24 matches exactly the cut-out dimensions of 24-pin standard industrial connectors. The cable entry plate is mounted either by screwing it to the inside of the enclosure or by snapping it into the cut-out.





Advantages & Benefits

- Elastomer of the cable entry plate made of material according to 1935/2004/EG , (EU) 10/2011
- FDA compliant
- Developed according to hygienic design guidelines (EHEDG)
- Hygienic design – free of dirt-collecting recesses
- Very flat design, very smooth surface (Ra 0.421 µm)
- Dual sealing of cables (IP66/IP68**)
- High strength and stability
- High strain relief
- Fast and easy assembly
- Very high cable density
- Cable diameter 3.2 – 20.5 mm
- Reproducible cleaning process
- Very low moisture absorption
- High resistance to aromatic solvents, oils, greases, mineral products

Specifications

Material	Frame: Polypropylene (PP), sealing plate: Elastomer FDA compliant material Food approval acc. to 1935/2004/EG Food approval acc. to (EU) 10/2011
IP rating	IP65/IP66/IP67/IP68**
Flame class	UL 94 HB
Color	Blue (similar to Signal blue RAL 5005)
Temperature	-40°C to +80°C
Properties	Halogen-free, silicone-free
For wall thickness	1.5 – 2 mm/0.059 – 0.079" (snap-in mounting)

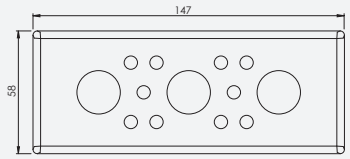
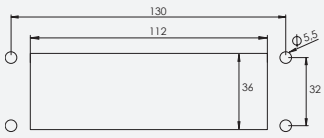
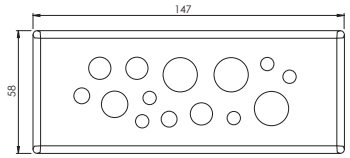
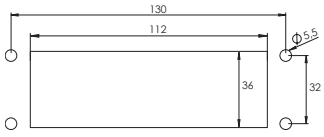
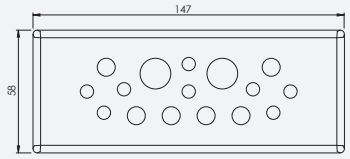
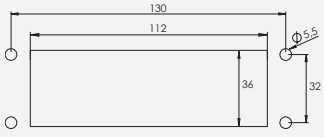
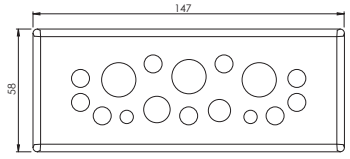
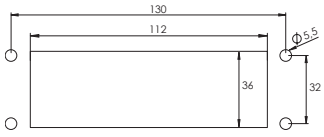
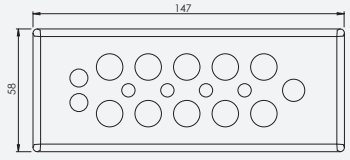
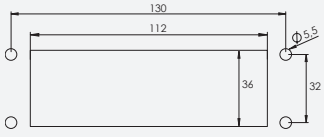
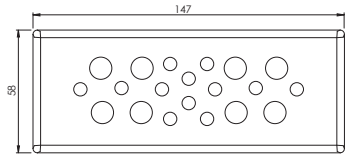
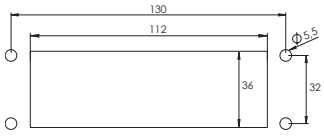
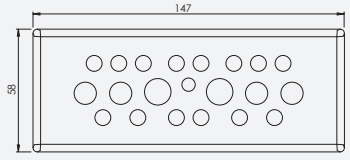
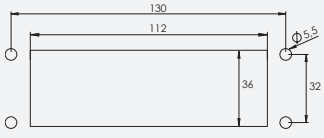
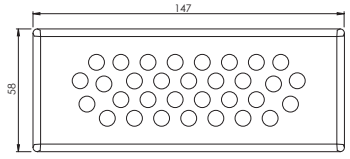
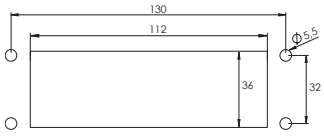
** IP67/IP68 only when screw mounted (certified acc. to EN 60529:2014-09)

KEL-DPU-HD

Heavy-Duty Cable Entry Plates with High Strain Relief

Hygienic Design Line

1935/2004/EG | EU VO. 10/2011 | FDA | ECOLAB certified | H_2O_2 | EN ISO 14644 | IP66 | IP68 | PNEUMATICS | RoHS compliant | HYGIENIC DESIGN LINE

Description	Cut-out | Drilling template	Type	Cut-out mm	Number of cables	Order No.	PU
		KEL-DPU-HD 24|13 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	10× 3.2 - 6.3 mm/ 0.126 - 0.248" 3× 16 - 20.5 mm/ 0.63 - 0.807"	73940	10
		KEL-DPU-HD 24|14 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	5× 3.2 - 6.3 mm/0.126 - 0.248" 2× 4 - 7.5 mm/0.157 - 0.295" 3× 5.5 - 10.5 mm/ 0.217 - 0.413" 1× 8 - 12.5 mm/0.315 - 0.492" 3× 12 - 16.2 mm/ 0.472 - 0.638"	73944	10
		KEL-DPU-HD 24|16 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	8× 3.2 - 5.5 mm/ 0.126 - 0.217" 6× 5 - 8.5 mm/ 0.197 - 0.335" 2× 9.5 - 14.5 mm/ 0.374 - 0.571"	73936	10
		KEL-DPU-HD 24|16-1 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	**2× 3.2 - 6.3 mm/0.126 - 0.248" 9× 4 - 7.5 mm/0.157 - 0.295" 1× 5.5 - 10.5 mm/0.217 - 0.413" 1× 8 - 12.5 mm/0.315 - 0.492" 3× 12 - 16.2 mm/0.472 - 0.638"**	73932	10
		KEL-DPU-HD 24|17 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	**4× 3.2 - 6.3 mm/ 0.126 - 0.248 " 2× 4 - 7.5 mm/ 0.157 - 0.295 " 1× 5.5 - 10.5 mm/ 0.217 - 0.413 " 10× 8 - 12.5 mm/ 0.315 - 0.492**	73934	10
		KEL-DPU-HD 24|20 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	12× 3.2 - 5.5 mm/ 0.126 - 0.217 " 8× 5 - 10.5 mm/ 0.197 - 0.413 "	73938	10
		KEL-DPU-HD 24|21 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	1× 3.2 - 6.3 mm/ 0.126 - 0.248 " 14× 4 - 7.5 mm/ 0.157 - 0.295 " 4× 5.5 - 10.5 mm/ 0.217 - 0.413 " 2× 8 - 12.5 mm/ 0.315 - 0.492 "	73930	10
		KEL-DPU-HD 24|32 with threaded bushings M4	36 x 112 mm 0.551 x 4.409"	32× 3.2 - 6.3 mm/ 0.126 - 0.248 "	73942	10

11
11.1
11.2

KEL-DPZ-HD
Cable Entry Plates
Hygienic Design Line

The cable entry plates KEL-DPZ-HD with metric thread from M32 to M63 have been developed for installation in food processing and packaging machines.

During the development according to the Hygienic Design guidelines, care was taken to ensure that the visible side of the cable entry plate are free of dirt-collecting recesses. The surface was kept very smooth. The outer contour has a radius of 6 mm instead of the required 3 mm. In addition, the KEL-DPZ-HD uses an FDA-compliant elastomer in accordance with food approval 1935/2004/EG and (EU) 10/2011. The signal color blue ensures a clear visual color recognition.

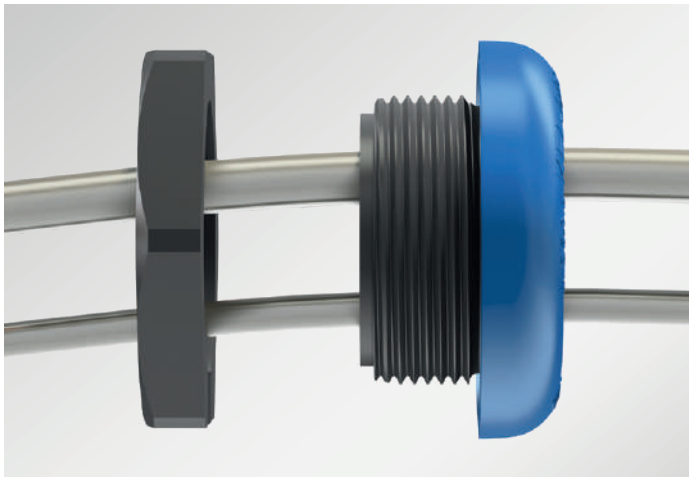
The cable entry plates are designed to route several cables and hoses with a diameter range of 3.2 mm to 22.2 mm and seal them acc. to IP65/66/67/68. A significant advantage over cable glands is the significantly higher cable density and the flexibility of the cable diameter range. The fixation is very simple with the lock nut. A lock nut is included in the shipment.

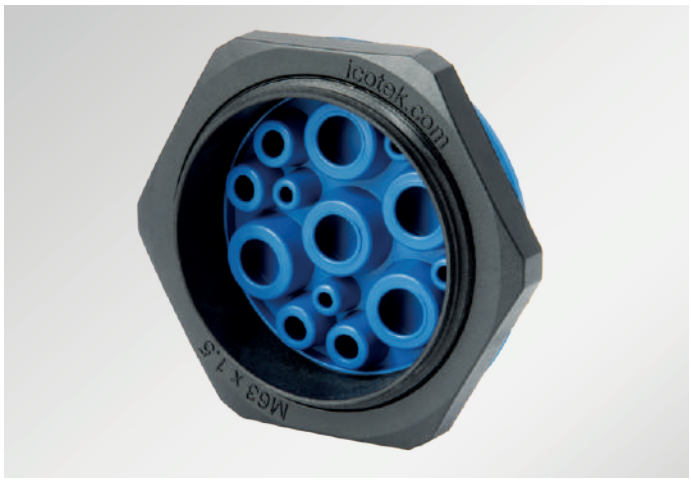
Advantages & Benefits

- Elastomer of the cable entry plate made of material according to 1935/2004/EG , (EU) 10/2011
- FDA compliant
- Developed according to hygienic design guidelines (EHEDG)
- Hygienic design – free of dirt-collecting recesses
- Ecolab certified
- Very flat design
- Very smooth surface (Ra 0.421 µm)
- Very fast assembly
- Cable diameter 3,2 – 22,2 mm
- Very large sealing areas and clamping areas
- High cable density
- High strain relief
- Dual sealing of cables (IP66/IP68)
- Suitable for metric cut-outs
- Reproducible cleaning process
- Very low moisture absorption
- High resistance to aromatic solvents, oils, greases, mineral products
- No corrosion possible because plastics have been processed
- Maintenance free

Specifications

Material	Polyamide and elastomer FDA compliant material Food approval acc. to 1935/2004/EG Food approval acc. to (EU) 10/2011
IP protection	IP65/66/67/68
Flame class	UL 94 HB
Color	Blue (similar to Signal blue RAL 5005)
Temperature	-40°C to +80°C/-40°F to + 176°F
Properties	Halogen-free, silicone-free





The KEL-DPZ-HD is also available as a cleanroom version, see from page 421.

KEL-DPZ-HD
Cable Entry Plates
Hygienic Design Line

Type	Number of cables	Thread metric	Thread length	Max. wall thickness	External diameter	Mounting height	Order No.	PU
KEL-DPZ-HD 25|3 NEW	2× 3,2 – 5,2 mm 1× 3,2 – 6,5 mm	M25 × 1.5	14 mm 0.551"	7 mm 0.276"	39 mm	8 mm 0.315"	70345	5
KEL-DPZ-HD 25|4 NEW	4× 3,2 – 5,2 mm	M25 × 1.5	14 mm 0.551"	7 mm 0.276"	39 mm	8 mm 0.315"	70346	5
KEL-DPZ-HD 32|4	3× 3.2 - 6.5 mm/0.126 - 0.248" 1× 7.2 - 12.5 mm/0.295 - 0.472"	M32 × 1.5	14 mm 0.551"	7 mm 0.276"	44 mm 1.732"	8 mm 0.315"	70351	5
KEL-DPZ-HD 32|4-2	4× 5 - 9.5 mm/0.197 - 0.374"	M32 × 1.5	14 mm 0.551"	7 mm 0.276"	44 mm 1.732"	8 mm 0.315"	70352	5
KEL-DPZ-HD 32|7	7× 3.2 - 6.5 mm/0.126 - 0.248"	M32 × 1.5	14 mm 0.551"	7 mm 0.276"	44 mm 1.732"	8 mm 0.315"	70353	5
KEL-DPZ-HD 40|8	4× 3.2 - 6.5 mm/0.126 - 0.248" 4× 5 - 10.2 mm/0.197 - 0.402"	M40 × 1.5	14 mm 0.551"	7 mm 0.276"	52 mm 2.047"	8 mm 0.315"	70354	5
KEL-DPZ-HD 50|8	5× 5 - 10.2 mm/0.197 - 0.402" 3× 7.2 - 12.5 mm/0.295 - 0.472"	M50 × 1.5	14 mm 0.551"	6 mm 0.236"	62 mm 2.441"	8 mm 0.315"	70355	5
KEL-DPZ-HD 50|10	7× 3.2 - 6.5 mm/0.126 - 0.248" 2× 5 - 10.2 mm/0.197 - 0.402" 1× 16 - 22.2 mm/0.63 - 0.866"	M50 × 1.5	14 mm 0.551"	6 mm 0.236"	62 mm 2.441"	8 mm 0.315"	70356	5
KEL-DPZ-HD 50|12	4× 3.2 - 6.5 mm/0.126 - 0.248" 8× 5 - 10.2 mm/0.197 - 0.402"	M50 × 1.5	14 mm 0.551"	6 mm 0.236"	62 mm 2.441"	8 mm 0.315"	70357	5
KEL-DPZ-HD 50|19	19× 3.2 - 6.5 mm/0.126 - 0.248"	M50 × 1.5	14 mm 0.551"	6 mm 0.236"	62 mm 2.441"	8 mm 0.315"	70358	5
KEL-DPZ-HD 63|9	1× 3.2 - 6.5 mm/0.126 - 0.248" 3× 5 - 10.2 mm/0.197 - 0.402" 4× 9 - 16.2 mm/0.354 - 0.638" 1× 16 - 22.2 mm/0.63 - 0.866"	M63 × 1.5	14 mm 0.551"	6 mm 0.236"	75 mm 2.953"	8 mm 0.315"	70359	5
KEL-DPZ-HD 63|13	4× 3.2 - 6.5 mm/0.126 - 0.248" 4× 5 - 10.2 mm/0.197 - 0.402" 5× 9 - 16.2 mm/0.354 - 0.638"	M63 × 1.5	14 mm 0.551"	6 mm 0.236"	75 mm 2.953"	8 mm 0.315"	70360	5
KEL-DPZ-HD 63|14	14× 5 - 10.2 mm/0.197 - 0.402"	M63 × 1.5	14 mm 0.551"	6 mm 0.236"	75 mm 2.953"	8 mm 0.315"	70361	5
KEL-DPZ-HD 63|35	35× 3.2 - 6.5 mm/0.126 - 0.248"	M63 × 1.5	14 mm 0.551"	6 mm 0.236"	75 mm 2.953"	8 mm 0.315"	70362	5

Can be combined with TE-M thread extension

*4X for indoor use only

ST-B-HD | ST-B-HDD
Plugs for Cable Entry Plates
Hygienic Design Line

icotek offers plugs of the type ST-B-HD in the signal color blue and in a detectable version of the type ST-B-HDD. The signal color blue ensures a clear visual color recognition.

The ST-B-HDD plugs consist of a combination of polymer compound and metal particles. These can be sorted out using metal detectors, X-ray devices and visual detection systems.

The ST-B-HD and ST-B-HDD plugs are particularly suitable for pharmaceutical applications and for the food industry.

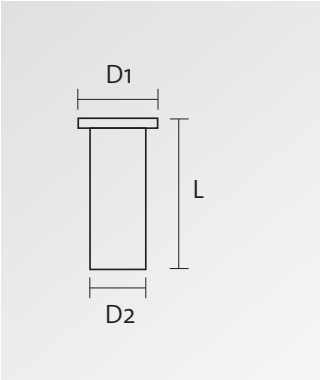
Advantages & Benefits

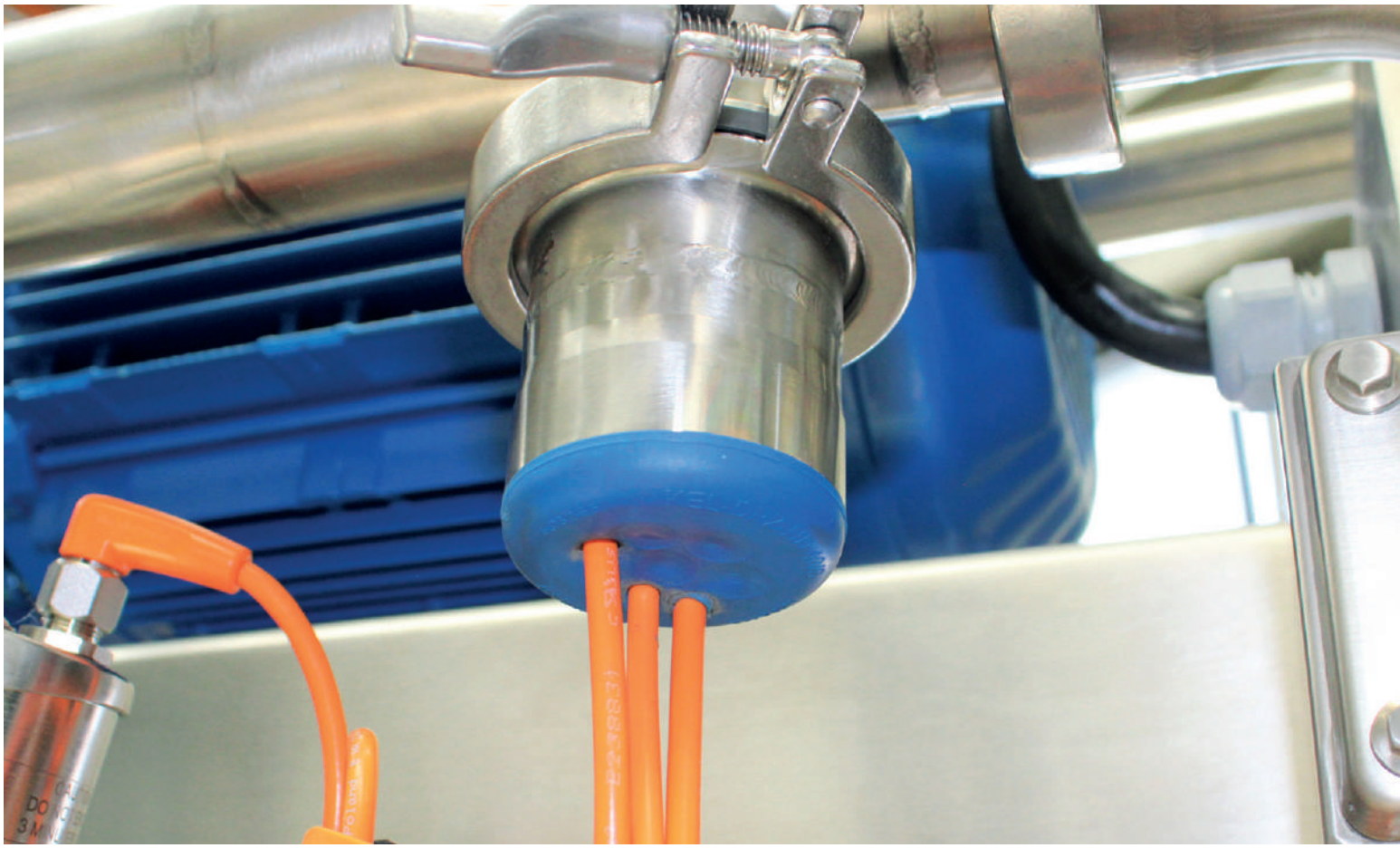
- Sealing of pierced cable entry membranes which are no longer in use
- Blue color for clear visual recognition
- ST-B-HDD: Detectable using metal detectors X-ray devices
- High resistance to aromatic solvents, oils, greases, mineral products

Specifications

Material	Polypropylene
Color	Blue (similar to Signal blue RAL 5005)
Temperature	-40°C to +120°C/-40°F to + 248 °F
Properties	Food approval acc. to 1935/2004/EG and (EU) 10/2011 ST-B-HDD: Detectable by V2A particles

Type	Order No.	Diameter D1	Diameter D2	Length L	PU
ST-B-HD 6	70500	8 mm 0.315 "	6 mm 0.236 "	16 mm 0.63 "	10
ST-B-HD 10	70501	12 mm 0.472 "	10 mm 0.394 "	16 mm 0.63 "	10
ST-B-HD 12	70502	15 mm 0.591 "	12 mm 0.472 "	16 mm 0.63 "	10
ST-B-HD 16	70503	19 mm 0.748 "	16 mm 0.63 "	16 mm 0.63 "	10
ST-B-HD 22	70504	25 mm 0.984 "	22 mm 0.866 "	21 mm 0.827 "	10
ST-B-HDD 6 detectable	70620	8 mm 0.315 "	6 mm 0.236 "	16 mm 0.63 "	10
ST-B-HDD 10 detectable	70621	12 mm 0.472 "	10 mm 0.394 "	16 mm 0.63 "	10
ST-B-HDD 12 detectable	70622	15 mm 0.591 "	12 mm 0.472 "	16 mm 0.63 "	10
ST-B-HDD 16 detectable	70623	19 mm 0.748 "	16 mm 0.63 "	16 mm 0.63 "	10
ST-B-HDD 22 detectable	70624	25 mm 0.984 "	22 mm 0.866 "	21 mm 0.827 "	10





Certificates

Product	IP rating						UL 50E rating		cURus	RINA	DNV-GL	EN45545-2	UV	ECOLAB	RoHS	Cleanroom	Flame class UL94		Halogen free
	IP54	IP64	IP65	IP66	IP67	IP68	12	4X				HL3					HB	V-0	Silicone free
Product group 1																			
KEL 24/16/10/-B	■						■		■	■	■	■	■	■	■			■	■
KEL 24-E/-MT/-2MT	■								■	■	■	■	■	■	■			■	■
KEL 16-E/-MT/-2MT	■									■		■	■	■	■			■	■
KEL-ER 24/16/10/-B	■	■	■	■			■	■	■	■		■	■	■	■			■	■
KEL-U 24/16/10/-B	■						■		■	■		■	■	■	■			■	■
KEL-E	■						■		■	■	■	■	■	■	■			■	■
KEL-ER	■	■	■	■			■	■	■	■		■	■	■	■			■	■
KEL-FA	■												■	■	■			■	■
	■	■	■				■		■			■	■	■	■			■	■
KEL-FG	■						■		■		■	■	■	■	■			■	■
KEL-FG-ER	■	■	■						■			■	■		■			■	■
KEL-FW	■	■	■						■			■			■			■	■
KEL-SNAP	■						■		■			■		■	■			■	■
KVT-ER	■	■	■	■	■	■	■	■	■	■		■		■	■			■	■
KVT gy	■						■		■	■	■	■		■	■			■	■
KVT bk	■						■		■	■	■			■	■			■	■
KVT 80 gy	■						■		■	■		■		■	■			■	■
KVT 80 bk	■						■		■	■				■	■			■	■
KVT-SNAP	■								■		■	■		■	■			■	■
KVT-W90 gy	■								■		■	■		■	■			■	■
KVT-W90 bk	■								■		■			■	■			■	■
DB	■								■			■		■	■			■	■
KT small gy, single	■	■	■	■	■	■	■	■	■	■		■	■	■	■			■	■
KT small bk, single	■	■	■	■	■	■				■			■	■	■		■		
KT small gy, multi	■						■		■	■		■	■	■	■			■	■
KT small bk, multi	■									■			■	■	■		■		
KT large gy	■	■	■	■	■	■	■	■	■	■		■	■	■	■			■	■
KT large bk	■	■	■	■	■	■				■			■	■	■		■		
KTMBS	■						■		■			■	■	■	■			■	■
KTMB small/ large	■						■		■	■		■	■	■	■			■	■
KT-DPF small gy	■						■		■	■		■	■	■	■			■	■
KT-DPF small bk	■									■			■	■	■		■		
KT-DPF large gy	■						■		■	■		■	■	■	■			■	■
KT-DPF large bk	■									■			■	■	■		■		

Certificates

Product	IP rating						UL 50E rating		cURus	RINA	DNV-GL	EN45545-2	UV	ECOLAB	RoHS	Cleanroom	Flame class UL94	Halogen free
	IP54	IP64	IP65	IP66	IP67	IP68	12	4X			GL	HL3					HB	V-0	Silicone free
DT	■						■		■	■		■	■	■	■			■	■
ST							■		■						■			■	■
KEL-FL	■								■		■	■	■		■			■	■
FT	■								■		■	■	■		■			■	■
KEL 183	■						■		■	■		■	■	■	■			■	■
KEL 183-E	■						■			■		■	■	■	■			■	■
KTMB 183	■						■		■	■		■	■	■	■			■	■
KEL-JUMBO	■						■		■	■		■	■	■	■			■	■
KTF	■						■		■	■		■	■	■	■			■	■
KTF-SCDP	■						■		■	■		■	■	■	■			■	■
KEL-QUICK 24/16/10/-B/-E	■						■		■			■	■	■	■			■	■
QVT	■										■	■		■	■			■	■
QVT-CLICK	■											■		■	■			■	■
KEL-QTA 24/10/-B/round	■								■	■		■	■	■	■			■	■
KEL-QTE	■								■	■		■	■	■	■			■	■
QT	■								■			■	■	■	■			■	■
UT/UT-DT	■								in progress			■	■	■	■			■	■
Product group 2																			
KEL-DPU 24 gy	■	■	■	■	■	■	■	■	■	■		■	■	■	■			■	■
KEL-DPU 24 bk	■	■	■	■	■	■	■	■	■	■			■	■	■			■	■
KEL-DPU-OD	■	■	■	■	■	■	■	outdoor	■						■			V-1	
KEL-DPZ 24 gy	■	■	■	■			■		■	■	■	■	■	■	■			■	■
KEL-DPZ 24 bk	■	■	■	■			■		■	■	■		■	■	■			■	■
KEL-DPZ 16/10/6	■	■	■	■			■			■			■	■	■			■	■
KEL-DPZ-B gy	■	■	■	■			■		■	■	■	■	■	■	■			■	■
KEL-DPZ-B bk	■	■	■	■			■		■	■	■		■	■	■			■	■
KEL-DPZ-E gy	■	■	■	■			■		■	■	■	■	■	■	■			■	■
KEL-DPZ-E bk	■	■	■	■			■		■	■	■		■	■	■			■	■
KEL-DPZ-KL gy	■	■	■				■		■	■	■	■	■	■	■			■	■
KEL-DPZ-KL bk	■	■	■				■		■	■	■		■	■	■			■	■
KEL-DPZ-FL21	■	■	■				in progress		in progress				■	■	■			■	■
KEL-DPZ round gy	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			■	■
KEL-DPZ round bk	■	■	■	■	■	■	■	■	■	■	■		■	■	■			■	■
KEL-DPZ-CLICK	■	■	■	■	■	■				■	■	■	■	■	■			■	■
KEL-DPFR	■	■	■	■			in progress	in progress	in progress	■		■	■	■	■			■	■
KEL-DPR	■	■	■				in progress	in progress	in progress			■	■	■	■			■	■

Certificates

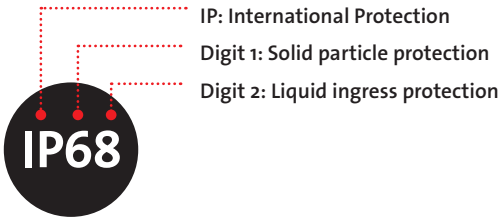
Product	IP rating						UL 50E rating		cURus	RINA	DNV-GL	EN45545-2	UV	ECOLAB	RoHS	Cleanroom	Flame class UL94	Halogen free
	IP54	IP64	IP65	IP66	IP67	IP68	12	4X				HL3					HB	V-0	Silicone free
KEL-DP 24 gy	■	■					■		■	■	■	■	■	■	■			■	■
KEL-DP 24 bk	■	■					■		■	■	■		■	■	■			■	■
KEL-DP 16/10/6	■	■					■			■	■	■	■	■	■			■	■
KEL-DP-E gy	■	■					■		■	■	■	■	■	■	■			■	■
KEL-DP-E bk	■	■					■		■	■	■		■	■	■			■	■
KEL-DP round gy	■	■	■				■		■	■	■	■	■	■	■			■	■
KEL-DP round bk	■	■	■				■		■	■	■		■	■	■			■	■
ST-B							■		■						■			■	■
KEL-SCDP-TR	■	■	■										■	■	■			■	■
KEL-SCDP | KEL-SCDP-RW	■	■	■									–|■	■	■	■			■	■
KEL-DPF gy	■	■	■	■		■		■	■	■		■	■	■	■			■	■
KEL-DPF bk	■	■	■	■		■		■	■	■			■	■	■			■	■
KEL-DPF-OD	■	■	■	■		■	in progress	outdoor	■						■			V-1	
KEL-JUMBO flex	■						■		■			■	■	■	■			■	■
KEL-ULTRA flex	■	■	■	■			■		■	■		■	■	■	■			■	■
Product group 3																			
KZL										■	■	■	■	■	■			■	■
SF|ZL										■	■	■	■	■	■			■	■
ZL										■	■	■	■	■	■			■	■
ZL-AB										■	■	■	■	■	■			■	■
ZL 03|04|05										■	■	■	■	■	■			■	■
KBH-S/KBH-R												■	■						
MSMC												■	■	■	■			■	■
Product group 4																			
EMV-KEL-DS	■									■					■		■		■
EMV-KVT-DS	■									■					■		■		■
Product group 5																			
CONFIX FWS-A/-B gy	■														■			■	■
CONFIX FWS-A/-B bk	■														■			■	■
Product group 6																			
KDR(S)-ESR/KDR-VX25	■											■			■			■	■
KDR2/KDR-BMP/MP	■														■				
FP-AX/FP-AE	■	■	■	■											■				
FP-KX/KL	■														■				
FP-BG/FP-FL21	■														■				

Certificates

Product	IP rating						UL 50E rating		cURus	RINA	DNV-GL	EN45545-2	UV	ECOLAB	RoHS	Cleanroom	Flame class UL94		Halogen free
	IP54	IP64	IP65	IP66	IP67	IP68	12	4X				HL3					HB	V-0	Silicone free
BPK	■	■					■	■	■						■			■	■
BPK-RF	■						■		■						■			■	■
BPM	■	■	■												■				
BPK-SNAP	■														■		■		
TE-M												■		■	■			■	■
KEA	■	■	■	■			■	– | ■				■		■	■			■	■
Drainage device	■	■	■	■	■	IP69K			■						■				
PCE	■	■	■	■	■	■									■				
KGM									■						■			■	■
Product group 7																			
KEL-BES(-S) 24/16/10/round															■			■	■
Product group 10																			
KEL-ER CR	■	■	■	■			■	■	■	■		■	■	■	■	■		■	■
KEL-U CR	■						■		■	■		■	■	■	■	■		■	■
KEL-DPZ CR gy/bk	■	■	■	■			■		■	■	■	■ | –	■	■	■	■		■	■
KEL-DPZ round CR gy/bk	■	■	■	■	■	■	■	■	■	■	■	■ | –	■	■	■	■		■	■
KEL-DPZ-HD CR	■	■	■	■	■	■			■					■	■	■		■	■
Product group 11																			
KEL-ER-BL series	■	■	■										■	■	■			■	■
KT-BL	■	■	■										■	■	■			■	■
KEL-DPU-HD	■	■	■	■	■	■								■	■				■
KEL-DPZ-HD	■	■	■	■	■	■	■	■	■					■	■				■

Appendix

IP protection classes



1. digit	Solid particle protection ...	2. digit	Liquid ingress protection ...
0	no protection	0	no protection
1	against any surface of the body > 50 mm	1	against dripping water (vertically falling drops)
2	against any surface of the body > 12.5 mm	2	against dripping water when tilted at 15°
3	against objects > 2.5 mm (tools)	3	against spraying water at any angle up to 60°
4	against objects > 1 mm (most wires)	4	against splashing water from any direction
5	Dust protected	5	against water jets from any direction
6	Dust tight	6	against powerful water jets from any direction by a nozzle
6	Dust tight	7	Suitable for temporary immersion in water up to 1 m depth
6	Dust tight	8	Suitable for continuos immersion in water*

*specified by the manufacturer

Appendix
UL Type Rating vs. NEMA Rating

Why you should only rely on the UL Type Rating according to UL 50E

UL type rating acc. to UL 50E

The UL type rating is required for enclosures, cable entry components etc. for which an UL approval is required – regardless of the installation location. The UL type rating according to UL 50E requires intensive testing!

If a customer has to deliver a device according to UL Type 4X to the U.S. and installs a cable entry component, the manufacturer of which only specifies as NEMA 4X, this can lead to big problems. The UL inspector who approves the device usually also requests the corresponding test certificate from the UL. If this cannot be shown, the component has to be removed because the device does not meet the requirements of UL 50E.

All icotek products with a type rating have been tested and certified by UL according to UL 50E!

NEMA Types

Using the NEMA rating lies with the responsibility of the manufacturer. That means: For enclosures, cable entry components etc. that are not particularly used for the North American market and for which no UL approval is required, the NEMA rating is sufficient.

It is also the sole responsibility of the manufacturer whether he checks the component on tightness at all or whether he just claims a NEMA conformity. An examination is not absolutely necessary. Regardless of whether the product is delivered to the USA or not, proof that the product corresponds to the tightness specified by the manufacturer is ensured by the type test according to UL 50E.

Flammability classification according to UL 94

Flame class UL 94 HB

Applying the horizontal burning test the material burns slowly. For parts with a thickness up to 3 mm the burning speed must not be faster than 3 inches/min and for parts with a thickness over 3 mm the burning speed must not be faster than 1.5 inches/mm. Materials which burn faster are not UL certified.

Flame class UL 94 V-2

Applying the vertical burning test, the material must normally extinguish itself after 25 seconds or less, but max. after 30 seconds. The material may drop and cotton wool placed under the probe may inflame. The material must not glow longer than 60 seconds.

Flame class UL 94 V-1

Applying the vertical burning test, the material must normally extinguish itself after 25 seconds or less, but max. after 30 seconds. The material may drop and cotton wool placed under the probe may inflame. The material must not glow longer than 30 seconds.

Flame class UL 94 V-0

Applying the vertical burning test, the material must normally extinguish itself after 5 seconds or less, but max. after 10 seconds. The material may drop down, but cotton wool placed under the probe must not inflame. The material must not glow longer than 30 seconds.

General reference notes

We provide all the information on chemical and physical properties of our products and technical advice to the best of our knowledge.

Please do your own examinations and tests to determine the practical suitability of the products for the usage intended.

Application, use and installation of the products is the customer's responsibility. Legal and regulatory provisions and any rights to third parties have to be observed.

Moreover our general terms and conditions apply, which can be requested from us.

This catalogue was prepared with the greatest care. All technical data and information have been reviewed before printing. Due to continuous improvement and development of our production programme we reserve, modify products from this catalogue or to take out products from our product range. Therefore, technical information and products which are included in this catalogue may differ – without prior notice.

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Reference list

Order No.	Page	Order No.	Page	Order No.	Page	Order No.	Page	Order No.	Page	Order No.	Page	Order No.	Page
31100	346	31606	307	32357	208	32768	281	36218	241	36424	278	36779.4	260
31105	358	31610	307	32358	208	32768.800	283	36220	247	36426	278	36779.5	260
31110	358	31612	307	32360	205	32769	281	36221	247	36428	278	36779.6	260
31120	358	31614	307	32361	205	32770	281	36222	245	36430	278	36779.7	260
31130	358	31616	307	32362	205	32771	281	36222.002	246	36432	278	36780.01	263
31140	358	31618	307	32363	205	32772	281	36224	245	36434	278	36780.02	263
31200	231	31620	307	32364	205	32773	281	36224.002	246	36436	278	36780.03	263
31210	231	31622	307	32365	205	32774	281	36226	246	36438	278	36780.04	263
31215	231	31624	307	32366	205	32775	281	36228	246	36440	278	36780.10	263
31220	231	31626	307	32367	205	32776	281	36229	247	36442	278	36780.11	263
31230	231	32000	202	32400	229	32777	281	36230	247	36444	278	36780.12	263
31235	231	32000.100	202	32401	229	32778	281	36231	247	36446	278	36780.13	263
31240	231	32001	202	32410	229	32800	281	36232	278	36448	278	36780.14	263
31250	231	32001.100	202	32411	229	32801	281	36234	278	36450	278	36780.20	263
31260	308	32002	202	32420	229	32802	281	36235	252	36452	278	36780.21	263
31300	309	32002.100	202	32421	229	32803	281	36235.002	253	36454	278	36780.22	263
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